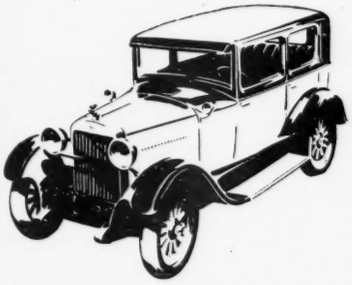
JAN 17 1928

MOTOR AGE

A Chilton Class Journal Publication
Published Weekly January 12, 1928

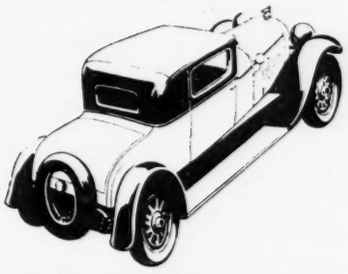
a New ESSEX SUPER SIX

New Bodies - Larger and Roomier —
New Appearance from Radiator to Tail Light -
Finer Fittings - Four Wheel Brakes -
High Compression - Long Life Motor &
An Amazing Price



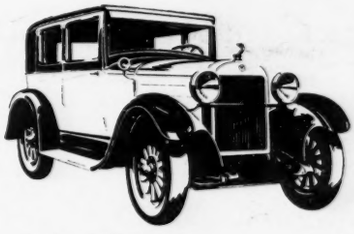
THE SEDAN, 4-Doors, in two shades of blue, with cream striping, is larger and roomier, with form fitting seats, wider doors, rich upholstery and appointments

$795



THE COUPE has wide seat, ample luggage space in the rear deck, and a comfortable leather rumble seat which is removable

$775



THE COACH is longer, wider, roomier — a full size five-passenger Super-Six, as distinctive in appearance as it is practical

$735

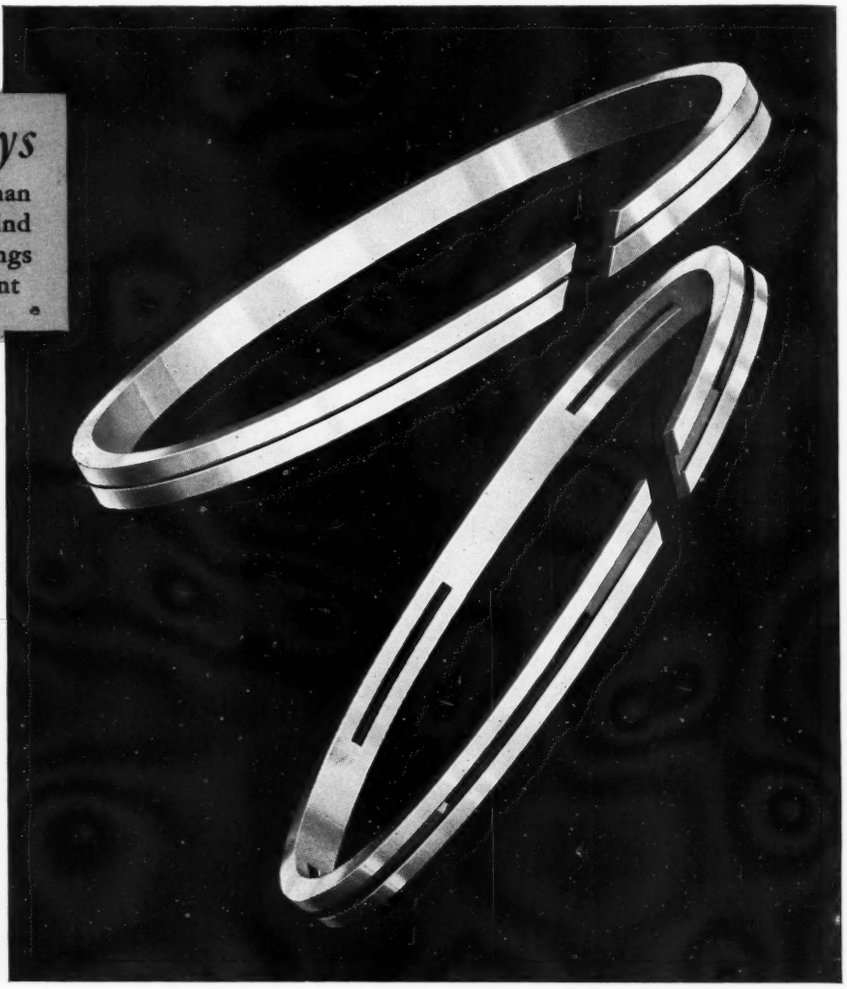
f. o. b. Detroit, plus war excise tax

One look at the new Essex Super-Six will convince you that it will excel in popularity the Essex which has just completed the most successful year ever achieved by a six-cylinder car.

From radiator to tail light it is a smarter, more beautiful car than even the Essex which preceded it. And in performance it surpasses in smoothness, reliability, speed and ease of handling, the standard Essex owners are so proud to acclaim.

HUDSON MOTOR CAR COMPANY, *Detroit, Michigan*

It Pays
the repairman to use the kind of piston rings people want



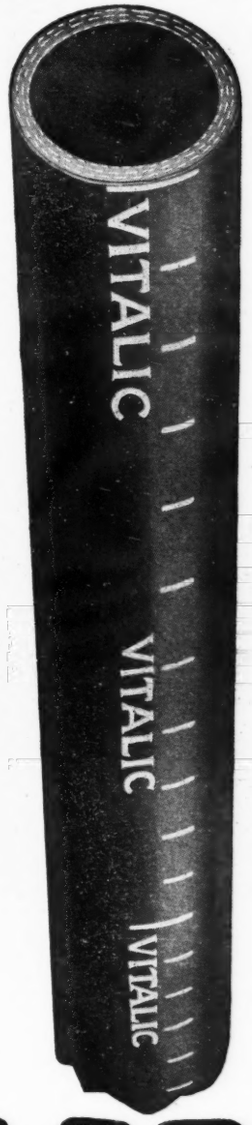
Only PERFECT CIRCLE RESULTS *satisfy motorists today . . .*

The average car owner's knowledge of what piston rings can do for his car is the direct result of PERFECT CIRCLE'S national advertising. When he has piston rings installed, he expects PERFECT CIRCLE performance—and if he doesn't get it, he is disappointed. Only PERFECT CIRCLES can give PERFECT CIRCLE performance. A nearby jobber will supply you.

Oil-Regulating Type	*Compression Type*
Pat. March 29, 1910; May 2, 1922	
60c	30c

THE PERFECT CIRCLE COMPANY · HAGERSTOWN, INDIANA

PERFECT CIRCLE
PISTON RINGS



The customer ought to know how CAREFULLY *you buy*

People come to you for service rather than to the other fellow, because they have confidence in you.

Thus public confidence is easily one of your primary assets. When you increase this confidence, when you build in your customers' minds a deeper respect for your judgment, you are increasing your capitalization as well as your turn-over.

And here is one good way to do it:

When you sell a man a piece of equipment, or a replacement part, tell him why you are selling him that particular make — why you selected that unit from the multitude you are asked to buy.

With *Vitalic* radiator hose, for instance, tell him how this hose is impervious to oil, how boiling water fails to wilt it, how radiator compounds and anti-freeze mixtures (except kerosene) can not harm it. Show him the foot and inch markings, and tell him how that protects him from waste—from paying for more hose than he needs.

VITALIC

REG. U. S. PAT. OFFICE

RADIATOR HOSE

For 24 years the Continental Rubber Works has been serenely busy and prosperous in making and selling Vitalic products, while the rubber industry at large has been rocked with fiscal convulsions. This, we think, speaks volumes for both Vitalic products and Vitalic selling methods.

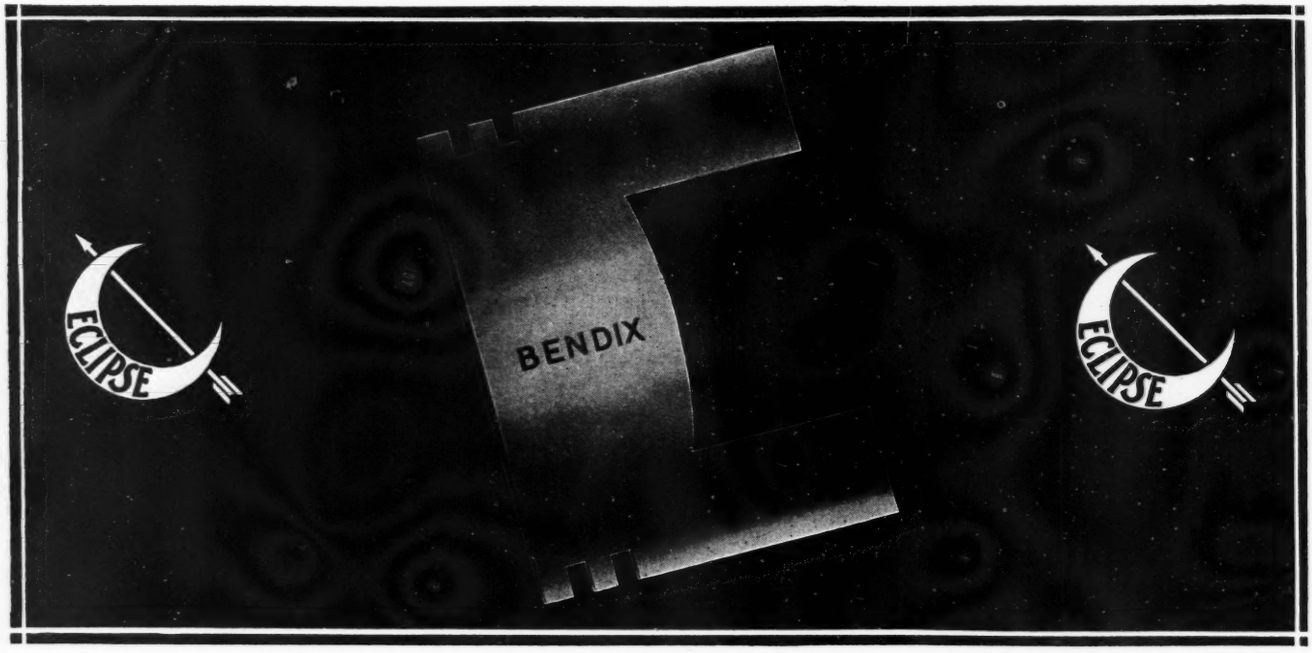
"Tougher Than *Elephant Hide"*

VITALIC Products are Sold EXCLUSIVELY Through the JOBBER

Continental Rubber Works, Erie, Pa.

CHAS C. KERNER, 152 Chambers Street, New York, Exclusive Foreign Representative

ECLIPSE
BENDIX DRIVE



ALWAYS A SATISFACTORY JOB
With This Genuine Sleeve

THE Eclipse Bendix Service Sleeve assures a completely satisfactory repair job and one that can be performed with the least amount of effort. Only a hammer and a blunt chisel are needed to install it easily and quickly.

Like all genuine parts for the Eclipse Bendix Drive, the service sleeve is protected against rust with a coating of zinc. Four sizes fit all types of drives. Eclipse Bendix Service Sleeves always give the dependable service demanded in starting equipment.

Your jobber can furnish you with an assortment of repair sleeves, ordered separately, or you can obtain them as a part of the Eclipse Bendix Service Station Stocks, which will allow you to give complete service on practically any make or model car.

Service Station Stocks

The new Eclipse Bendix Service Station Stocks have been developed to enable the repairman to give complete and dependable service on a maximum number of cars with a minimum investment. Service Station Stocks No. 1 enables the servicing of fully 75% of the cars in service today. Service Station Stock No. 2 is even more comprehensive, and enables the servicing of more than 85% of the cars. Fill out and mail coupon below for complete information.

Eclipse Machine Company
Elmira, New York
Department 7

We are interested in the new Eclipse Bendix Service Station Stocks. Please send complete information, and names of nearest jobbers to

Name_____

Address_____

City_____

ECLIPSE MACHINE COMPANY
ELMIRA, NEW YORK

Eclipse Machine Co., East Orange, N. J. - Eclipse Machine Co., Ltd., Walkerville, Ont.

MOTOR AGE

Reg. U. S. Pat. Off.

Vol. LIII Established 1899 No. 2

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CONTENTS

News of the Industry and Trade 9
Dibble Gabble. By Lewis C. Dibble 11
John Cleary Says— 15
Opinions of Automotive Executives Interviewed at the Show 16
Price Announcements and Changes 18
Gas, Oil and Hot Dogs (at the show) 19
The Industry Exalts the New. By John Cleary..... 20
Many Mechanical Changes Made in 1928 Cars. By P. M. Heldt 22
Durant Markets Three Lines of Sixes 25
Show Reveals Makers Aim at New Effects in Design. By K. W. Stillman 26
Equipment Makers Meet Shop Needs. By Paul Dumas 29
Accessories Pace Public's Taste for the Decorative. By Sherman Swift 31
The Latest in Equipment for the Automotive Service Shop 32
The Newest in Accessories Offered the Automotive Trade 34
Graham-Paige Redesigns Line, Which Now Consists of Four Sixes and a Straight Eight. By A. F. Denham 36
Larger Engine Used in Velie 6-66 39
Aerotype 8-80 is New Moon Line of Eights. By M. Warren Baker 40
duPont Uses Four-Speed Transmission 42
A Motor Age Impression of E. L. Cord. By Pete Keenan 43
Moving is Sometimes Preferable to Remodeling a Building. By Tom Wilder 44
Legal Queries on Automotive Topics. By Wellington Gustin 45
Readers' Clearing House. Answers by C. Edward Packer 46
Purrs and Pings 50
Prices and Weights of Current Passenger Car Models 51
Mechanical Specifications of Current Passenger Car Models 54
Advertisers' Index 66-67

MOTOR AGE is published every Thursday by

CHILTON CLASS JOURNAL COMPANY

Chestnut and 56th Streets, Philadelphia, Pa.

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J. S. HILDRETH, Vice-Pres. and Director of Sales
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Owned by United Publishers Corporation, 239 West 39th Street, New York; ANDREW C. PEARSON, Chairman, Board of Directors; FRITZ J. FRANK, President; C. A. MUSSELMAN, Vice-President; F. C. STEVENS, Treasurer; H. J. REDFIELD, Secretary.

SUBSCRIPTION RATES: United States, Mexico and U. S. Possessions, $3.00 per year; Canada, $5.00 per year; All other countries in Postal Union, $6.00 per year: Single Copies, 35 cents.

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Member of the Audit Bureau of Circulations
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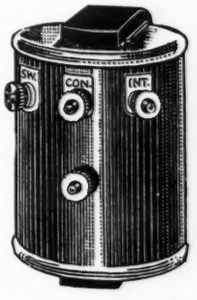
Subscriptions accepted only from the Automotive Trade
Entered as Second Class Matter, June 2, 1927, at the Post Office at Philadelphia, Pa., under Act of March 2, 1879

Being towed to a garage, after a hard day's work and missing a good dinner at home, only because you haven't a Primax, is exasperating not to mention embarrassing.

A Primax Transformer would be worth buying for winter use only, but it's guaranteed to give satisfaction summer or *winter* for the life of the car.

Our registered guarantees show that 42 per cent of the Primax Transformers sold go to replace coils that were working as well as ever, but not well enough to satisfy.

The same model fits all cars and is easily and quickly installed.



THORDARSON PRIMAX IGNITION

Unconditionally Guaranteed

THORDARSON ELECTRIC MANUFACTURING CO.
Transformer Specialists since 1895
WORLD'S OLDEST AND LARGEST EXCLUSIVE TRANSFORMER MAKERS
Chicago, U.S.A.

THORDARSON ELECTRIC MFG. CO.
500 West Huron St., Chicago, Ill.

Send complete sales information and net trade prices on Primax Ignition Transformers.

Name .....

Address .....

(3783)

WE respectfully direct your attention to the advertisement on the opposite page which appeared in the Detroit newspapers on Sunday, January 8, 1928.

"The owners of Paige cars are best served through dealers who have the three fundamental C's—Character, Capability, Capital." (A Message from the three Graham brothers—June, 1927.)

In Detroit, and throughout lower Michigan, the names of James M. (Pat) O'Dea and Lansing W. Thoms are held in high respect, and it is with especial pride that we welcome these men and their new organization into our family.

Joseph B. Graham
Robert C. Graham
Ray A. Graham

GRAHAM-PAIGE

Today... January 8, we join fortunes with the three Graham brothers

James M. (Pat) O'Dea
Lansing W. Thoms

WE ARE very happy to announce to our friends in Detroit and lower Michigan that we have assumed the sale and service of the new Graham-Paige motor cars throughout this territory.

Our new connection marks the continuation of an association that began at the University of Michigan many years ago. Both of us were graduated from that institution, and have been associated together in business since.

Our organization will be known as Graham-Paige of Michigan. Its president will be Mr. Robert C. Graham, vice-president of the Graham-Paige Motors Corporation. James M. (Pat) O'Dea will be vice-president and general manager, and Lansing W. Thoms will be vice-president and general sales manager.

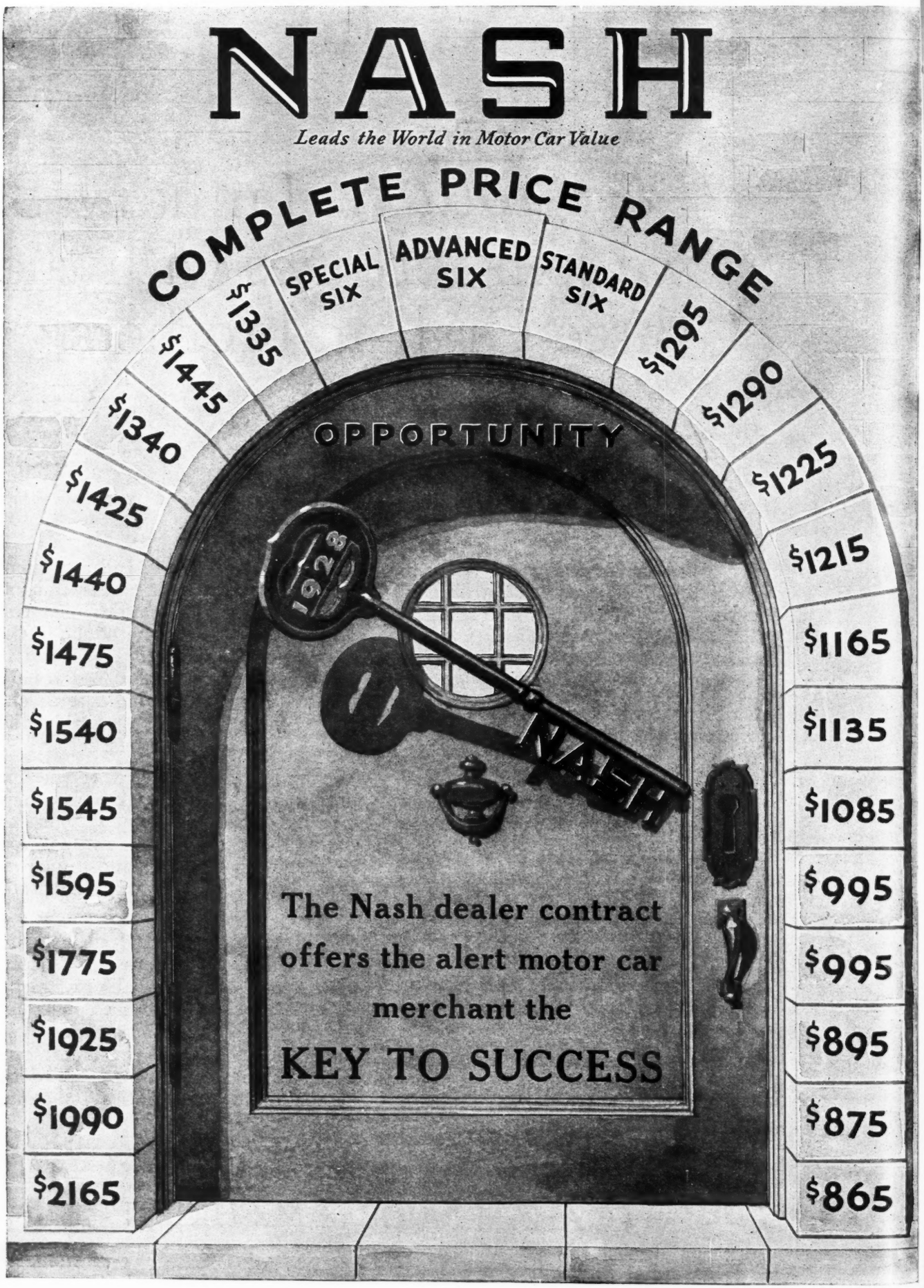
Both of us are intimately acquainted with the manufacturing and merchandising policies of the three Graham brothers, and are heartily in accord with them. We are in full agreement that the foundation of a greater Graham-Paige Motors Corporation must rest on the confidence of the public in the integrity and ability of the three Graham brothers as manufacturers. And we have pledged ourselves to build with the three Graham brothers upon this solid foundation, stone by stone.

We are likewise familiar with the fine production facilities back of the new Graham-Paige. We know that the three Graham brothers are in position to build cars of quality, and to market them at prices that will represent substantial values.

We extend our personal greetings to you for a very happy and prosperous New Year, and we cordially invite you to visit us soon—either to meet us, or to renew old acquaintanceship. We want you to inspect the motor cars with which we are so proud to be identified, and our facilities for accommodating the public.

GRAHAM-PAIGE of MICHIGAN

Woodward at Medbury - - Service at 38 Hendrie


NASH
Leads the World in Motor Car Value
COMPLETE PRICE RANGE
SPECIAL SIX
ADVANCED SIX
STANDARD SIX
$1335
$1445
$1340
$1425
$1440
$1475
$1540
$1545
$1595
$1775
$1925
$1990
$2165
$1295
$1290
$1225
$1215
$1165
$1135
$1085
$995
$995
$895
$875
$865
OPPORTUNITY
1928
NASH
The Nash dealer contract offers the alert motor car merchant the
KEY TO SUCCESS

(7264)

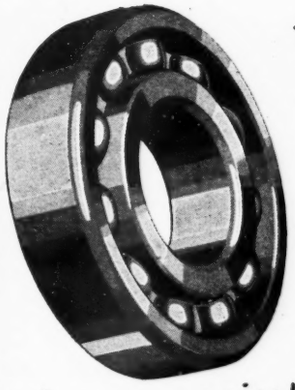
Put This in Your Sales Talk

AN automobile salesman cannot help but gain enthusiasm in his work from the fact that the makers of his car have deliberately paid more for bearings in certain important positions—to give the public better and longer service, without need of replacement or adjustment.

In addition to the large number of cars already using New Departures, this superior anti-friction bearing has been added to fifteen more positions in ten of the new models announced so far for 1928.

THE NEW DEPARTURE MANUFACTURING COMPANY
BRISTOL, CONNECTICUT
Detroit Chicago San Francisco

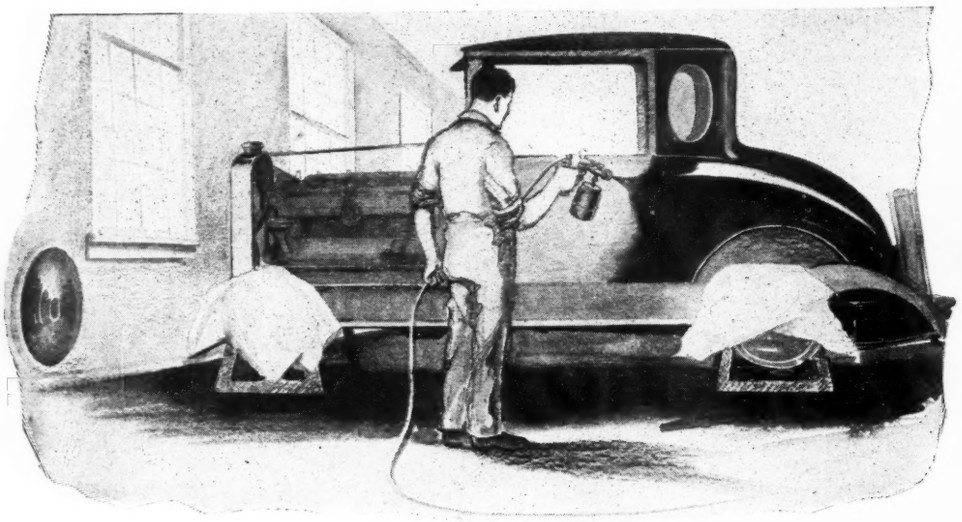
Service stocks carried by the official distributors of United Motors Service, Inc. in 800 American cities.

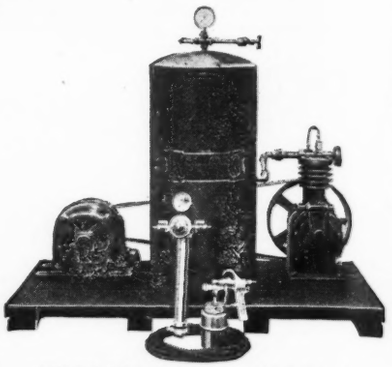


New Departure Quality Ball Bearings

812

KELLOGG COMPRESSORS





KELLOGG Spray Painting Outfit No. 4

The most spray painting equipment for the money. Guaranteed to give the one-gun shop dependable service. 8 cubic ft. compressor with unloader, 1½ horsepower motor, spray gun, transformer and hose complete.

$238.00 Net

KELLOGG Spray Painting Outfit No. 2

A portable outfit for the automobile dealer who refinishes his own used cars. Equipped with 4 cubic ft. compressor, spray gun and hose complete.

$188.00 Net

KELLOGG

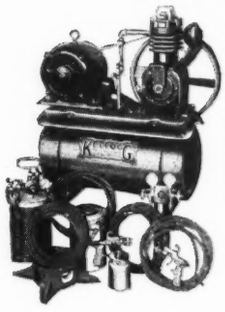
A Complete Line of Paint Spraying Equipment for the Automotive Trade

EVERYTHING needed for paint spraying—from the smallest touch-up job to equipment for the production shop is in this KELLOGG line.

Low price spray guns and production spray guns, transformers, pressure feed tanks, exhaust fans, portable and stationary spray painting equipment, compressors for one, two, three or more gun outfits, any kind of a combination desired, they're all put out by KELLOGG.

Like KELLOGG Compressors, the KELLOGG line of paint spraying equipment stands for the highest quality and more for your money.

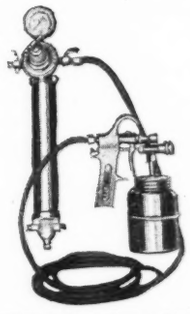
A postcard will bring you an illustrated catalog



KELLOGG Spray Painting Outfit No. 6

The last word in spray painting equipment for the production paint shop. 2-cylinder, 20 cubic ft. air compressor, complete with guns, transformers, pressure feed tank, etc.

$429.60 Net



KELLOGG Spray Gun Group No. 53

An invaluable spray gun outfit for the up-to-date service station. Perfectly balanced gun, comfortable handle, two finger trigger, highly efficient transformer.

$51.50 Net

KELLOGG Spray Gun Group No. 54

Made up of all the essential units except the air compressor necessary to the one-gun automobile refinishing shop. Can be increased easily with the expansion of business.

$64.30 Net

KELLOGG MANUFACTURING CO.

200 HUMBOLDT STREET ROCHESTER, N. Y.

KELLOGG Type "C" Spray Gun—Standard 6 ft.

Combines in one gun all the good features that spray men have wanted for years in a duty gun. Small, light, but steady, perfectly balanced, fast and easy to operate.

$22.00 Net

MOTOR AGE

VOLUME LIII — *Philadelphia, Pa., January 12, 1928* — NUMBER 2

German Chief of Peerless Company

Appointed General Manager Following Resignation of Ver Linden

CALFEE CHAIRMAN

CLEVELAND, Jan. 7—Leon R. German was appointed general manager of the Peerless Motor Car Corp. at a directors' meeting today, following the resignation of Edward Ver Linden as president, yesterday.

R. M. Calfee was elected chairman of the board of directors and also chairman of the executive committee, consisting of Chas. A. Tucker, general sales manager, F. A. Trester, treasurer, Mr. German and Mr. Calfee.

Beyond a strong and unequivocal denial that Peerless is considering or is interested in any way in any merger with any other company, Mr. German would not discuss the details of the plans which the new management immediately formulated.

"I prefer to let the accomplishments of the new management speak for themselves, after they have been brought to fruition, rather than to forecast our program in advance. The many friends of Peerless, however, have my assurance that my associates and I will be mindful of our reputation as workers and it will be our aim to justify and strengthen that reputation."

Leon R. German has seen many years of service in the industry. He was formerly vice-president of Olds Motor Works. He has been with Peerless since February, 1925, as vice-president.

R. M. Calfee has been Peerless counsel for many years.

Hupp Promotes Two

DETROIT, Jan. 11—Hupp Motor Car Corp. has promoted F. D. Peabody and J. E. Roberts to new assistant sales managerial positions which have been created by Rufus S. Cole, general sales manager to provide for a closer continuous contact with the distributor organization and the factory field sales force.

Leon R. German

Mr. German is the newly elected general manager of Peerless Motor Car Co. (Story at left)

Studebaker Banquet and Dealer Meeting

NEW YORK, Jan. 9—More than 1200 dealers from Eastern States and 19 foreign representatives from 10 European and South American countries were present at the International banquet of the Studebaker Corp. at the Plaza Hotel Saturday evening, Jan. 7. Paul G. Hoffman, vice-president of the corporation, characterized the gathering as the greatest dealer meeting in Studebaker's history.

Mr. Hoffman was toastmaster, and the speakers included A. R. Erskine, president of the company, and Messrs. H. S. Welch, export manager; J. K. Wauters, supervisor of European sales; H. S. Vance, vice-president; D. G. Roos, chief engineer; W. S. James, research engineer; E. J. Murnane, manager New York branch, and Ira C. Jones, Newark, N. J., one of the company's premier distributors.

In This Issue

—a complete review of the New York show

Greatest Rubber Merger Forecast

Rumor Links duPont Interests With U. S., Goodyear and Seiberling

BIG MEN NAMED

AKRON, Jan. 11—Leaders in the rubber industry are forecasting the greatest merger in the history of the business.

Rumor links F. A. Seiberling, founder of Goodyear Tire & Rubber Co., and Seiberling Rubber Co., with the duPont interests in a giant combine which will include United States Rubber Co., Goodyear and Seiberling.

The duPonts, known to seek a rubber company, six months ago began buying in U. S. Rubber and last week completed their control, it is declared. They are reported to be in position to take over control of U. S. Rubber following the next meeting of stockholders.

Seiberling's recent "pay-off" of $5,000,000 cash is linked with the merger talk. Seiberling, in well-informed circles, is clearing up his personal financial situation in order to participate in the proposed combine.

In any event, it was said locally, no definite action can be taken for several months—certainly not until after the Goodyear stockholders meet in the spring.

Seiberling refused to talk on the merger rumor other than to deny the publication is in any sense official and to deny he is the moving factor. Besides Seiberling and the duPonts, other names linked are Edgar B. Davis, Seiberling's personal friend, the Morgan international banking interests, John N. Willys and Cyrus Eaton, Cleveland millionaire.

Rickenbacker Joins Cadillac

DETROIT, Jan. 7—Cadillac Motor Car Co. has announced the appointment of Capt. E. V. Rickenbacker as assistant sales manager. Executives of the company state that Mr. Rickenbacker will devote his entire time to the La Salle line.

1928 Gets Away to a Flying Start

All Indications Point to Most Successful Year for Industry

NEW YORK, Jan. 6—A general note of optimism is sounded from every retail automobile center in the United States as 1928 gets under way. Stocks of new cars are low, and used cars stocks are apparently in good condition.

This condition in the retail field indicates that large volume factory production will be readily absorbed for some time at least. With the new models on display at the New York show dealers feel that the last of the important influences restraining sales will be swept away and that large volume retail business will get under way early.

Considerable uneasiness as to the effect of the new low priced cars on the used car market is being expressed, as many dealers believe much of the usual buying of these cars will be turned into buying of new low priced cars. The slow deliveries of Ford cars in the early part of the year, however, is expected to ease this situation for the time.

Factories resuming after the holidays are getting into production on a moderate basis and shipments to dealers are mainly to meet current sales needs. Large scale operations are several weeks away but the indications are that beginning with February the production ration will be as large if not larger than the corresponding months in 1927.

(Turn to page 14, please)

Guthrie, Peerless, to Join General Motors Export Co.

CLEVELAND, Jan. 6—W. G. Guthrie, for the past three years factory and production manager of the Peerless Motor Car Corp. of Cleveland will sail for London, Jan. 15 to accept a position with the General Motors Export Co.

He will become regional production manager for the territory including Germany, France, Denmark, Sweden, Egypt and Spain.

Hooey-ism

A GOOD parts man is glad to tell a shade tree mechanic how to repair a $3,000 car with a hammer, wrench and pair of pliers.

Great Heroes of Industry and Trade

2 ct. Stamp Licker

PICTURE Mr. J. P. Kole, an humble clerk in the Pizarro Motor Car Company's sales office. He is generally believed to be in the twilight zone of intelligence, therefore is training for a factory salesman. One day the two-cent stamp affixing machine breaks. Mr. Kole, who does everything no one else wants to do, is called on to fill in. With the near hysterical enthusiasm of one who at last has found his *metier*, Mr. Kole falls upon the stamps. In one short week of practice he has proved that he can do the work of two machines.

Pressed for a statement, Mr. Kole modestly said: "It was all a case of finding what I could do best and doing it."

He is now practicing on one-cent stamps at home, and expects soon to set a record for affixing them. He was at first loath to work on them because the color reminded him painfully of his father, who died from drinking absinthe. The difficulty was solved, however, by the acquisition of a pair of yellow motoring goggles.

Voisin Smashes Distance Marks

Car Powered by Knight Type Engine Averages 113½ m.p.h. for 24 hours

NEW YORK, Jan. 7—In addition to breaking numerous short distance records on the French tracks, the Voisin, a French car employing the Knight type of engine, recently smashed the world's records for 12 and 24 hours. In the 24-hour grind on the Montlhery track the Voisin averaged 113½ miles an hour for 24 hours, covering a total distance of 2724 miles.

This is equivalent to a dash from New York City to Salt Lake City, Utah.

In the 12-hour grind the Voisin set a record of 1353 miles for an average speed of 112 miles an hour.

It set new marks for 1000 miles, 2000 kilometers, 3000 kilometers, 2000 miles, 4000 kilometers and 3000 miles. The car also holds world's records for 100 kilometers, 100 miles, 500 kilometers, 500 miles and 1000 kilometers.

Cash Contest and Turkey Hunt Won By McSherry

ST. LOUIS, Jan. 7—In a most successful effort to increase distributor and service station sales during the months of November and December, the Carter Carburetor Corp. put on a Cash Contest and Turkey Hunt.

The winner of the first prize was R. J. McSherry of the Automotive Electric Service Corp., New York City, while hunters who corralled Christmas turkeys were: William G. LeFevre, Automotive Elec. Service Corp., N. Y.; C. J. Stuck, E. S. Cowie Electric Co., Kansas City; C. B. Grayson, Chain Battery Co., Shreveport; Ed. Noble, Automotive Electric Service Corp., N. Y.; O. C. Wetzel, Chain Battery Co., Shreveport; George Boroff, Reinhard Bros. Co., Inc., Minneapolis; Henry C. Fite, Auto Electric Service Co., Montgomery; M. O. Havens, E. S. Cowie Electric Co., Wichita; Clarence Resiner, Equipment Service Co., Indianapolis; Milt Cohen, Sampson Electric Co., Chicago; T. W. Eastham, Automotive Electric Co., Dallas; W. E. Heyers, Sampson Electric Co., Chicago.

Hooey-ism

THE perfect mechanic will always welcome the chance to lend his tool kit to the man who wants to overhaul his car over Sunday.

Seek Standard Bumper Height

S.A.E. Findings Recommended by Commerce Dept. for Adoption

WASHINGTON, Jan 9—Standardization of height for automobile bumpers has been recommended by the division of simplified practice of the Department of Commerce, adopting a standard proposed by the Society of Automotive Engineers.

The S.A.E. standard for passenger-car bumpers, small motor-coaches and light delivery trucks is as follows: "The horizontal centerline of bumper face, exclusive of fittings, shall be 18 inches plus or minus ⅜ inch per inch of effective face above the ground for front bumpers and 19 inches plus or minus ⅜ inch per inch effective face above the ground for rear bumpers or fender-guards.

"The minumum overall length of front bumpers shall be 60 inches on passenger cars having the standard 56-inch tread. The minimum dimension measured between the extreme ends of rear bumpers, or fender guards, shall be 60 inches on passenger cars having the standard 56-inch tread. The minimum vertical depth of bars for single-bar-type front and rear bumpers shall be two inches.

"The bumper height shall be measured with the car supplied with the normal amount of water, oil, and gasoline, but without passengers or other load. The vertical spread of contact face shall be the distance between the upper and lower edges of the outer-bumper elements, exclusive of any additional projection parts.

"The only way to make these standards effective is through adherence on the part of car manufacturers and car owners. It is urged that car owners check up on their bumpers to see if they are attached in accordance with the above standards."

G. W. Cushing Advertising Manager of Graham-Paige

DETROIT, Jan. 9—George W. Cushing has been appointed advertising manager of the Graham-Paige Motors Corp., succeeding Walter P. Towers, recently resigned. Mr. Cushing is widely known in the Detroit territory, having served as advertising manager of Federal Motor Truck Co. and of Hudson Motor Car Co., and later as a partner in the McKinney Marsh and Cushing agency which handled much of the Ford business.

dibble gabble

By Lewis C. Dibble

¶ HERE we are again down in New York for the National Automobile Show. And from the looks of all the nifty creations that greet the eye in Grand Central Palace it appears Mr. John Public will have a hard time selecting the 1928 family gas chariot.

* * * *

THE chap who hunts all over the building and sheds tears because he can't find the new Ford is with us again. Mr. Ford never became a member of the National Automobile Chamber of Commerce, hence his cars are not in the big display. But down at Madison Square Garden where some of our so-called pugilists get their regular socks in the jaw, etc., Mr. Ford is holding a young circus all of his own. And he's admitting the public free.

* * * *

¶ AND the automobile show naturally attracts a lot of prominent parts makers. For instance take Harry Harper of Lansing, who runs Motor Wheel Corp. Harry told a circle of friends that orders Motor Wheel has on its books augurs well for the best year in the company's history.

* * * *

ANOTHER chap from Lansing who appears happy over the outlook is Clarence Triphagen, best known as sales manager for Reo Flying Clouds, Ferocious Fighting Wolverines and Speed Wagons. Clarence said Reo built 40,000 units in 1927, which is a new record. And from the way Clarence does things it's a safe bet that another Reo record is in order for 1928.

* * * *

¶ YOU ought to see the nifty new creations that this young chap E. L. Cord has down here. And technically speaking there are no strings on them. At any rate the new Auburns are more than good looking. Using a rather slangy phrase they've got guts and plenty of them. And if you don't believe that, just try to pass one on the road some day.

* * * *

R. H. GRANT appeared on the scene with his large corps of sales cohorts keenly confident that Chevrolet is on the way to another highly gratifying year. Mr. Grant says reports around the country indicate that the new Chevrolet is meeting with mighty favorable public acclaim. And to prove the public interest he pointed to the mob of show visitors who were swarming around the Chevrolet booth for just one squint at the latest creation.

* * * *

SPEAKING of Chevrolet reminds me of a right royal serenade the new car got in Detroit the day after it was introduced. A fleet of 24 new Ford touring cars destined for the Detroit police department were driven from the Fordson plant and as they circled General Motors Building where the Chevys were being admired by the vast multitudes, paid their compliments with a symphony played on their horns. And that just goes to show the friendly spirit that exists in this great big automotive industry.

* * * *

YOU should see the smile of satisfaction on Rufus Cole's face. Rufe is waxing warm with enthusiasm over the new Hupmobile Eight. And we wonder who wouldn't wax just a little bit with such a good-looking car as that to offer to the public. Hupmobile, incidentally, is drawing a great deal of interest from the show visitors. It's one of the sensations of the year and should tend to boost Hupmobile's sales volume immeasurably.

* * * *

OUR genial friend Dave Irwin of Cadillac arrived in town wearing the smile for which he is famous. And speaking of Dave gives me the opportunity to tell you a good story about him. Dave, it appears, thinks that next to advertising men there's nobody in all the world who hold so much human appeal as do hog-callers. And so when Dave decided to pick out a business creed he had the following framed and it now hangs in his office: Said Fred Patzel, World's Champion Hog Caller for 1926, when asked for the reason for his success: "You've got to have appeal as well as power in your voice—you've got to convince the hogs you've get something for them." And that, dear reader, is more truth than poetry.

Last Quarter Sets New Hupp Record

Heavy Demand for New Six Reported Unbroken by Dealers

DETROIT, Jan. 12—Continued heavy demand for the new Hupmobile 1928 Six has set a new last quarter's record for production and sales, according to R. S. Cole, general sales manager of the Hupp Motor Car Co.

"In view of the very satisfactory December sales total, following the record sales which made November the best month in the company's history, the last three months of 1927 will go into Hupp annals as the largest last quarter the company has ever known," said Mr. Cole.

"The remarkable reception accorded the new six shows no signs of slackening. The initial enthusiasm, which brought in a volume of orders during November far beyond any previous month we had known, has continued with unbroken force. Even yet, weeks after the new cars were first put on the market, a flood of orders is still pouring in from all parts of the country. Our dealers everywhere are highly enthusiastic over the public's reaction to the appeal of the new car's features and our reports from all sides give cause for high confidence over the prospect for Hupp business during the coming year.

Gain, Despite General Decline

"One of the very gratifying aspects of the record business of the last two months is that it was in marked contrast with the seasonal decline reported in motor car sales generally. It is all the more satisfactory because it was attained in the face of serious handicaps, for we have encountered difficulty in obtaining sufficient materials to meet the heavy demand for the new car and have also to take into account the fact that the factory was closed Dec. 24 for inventory, cutting off time that would have swollen the production record even above the high figures it has reached.

"Our consumption capacity will continue to rise in 1928. Living standards are still undergoing changes. The prosperity that has existed for several years has accentuated a trend initiated in no small part by the automobile."

Heads Show

George R. Lindblom

MR. LINDBLOM gets his picture in the paper because he is the efficient and successful chairman of the Milwaukee Automobile Show Committee. They don't come much better looking do they?

Cadillac Co. Opens Palm Beach Salon

Newest Coachwork Displayed on Cadillac and La Salle Chassis

PALM BEACH, Jan. 12—With the opening of the social season in Florida, a salon for the display of coachwork on Cadillac and La Salle chassis has been opened in a new building in the exclusive club and shopping district by the Cadillac Motor Car Co.

The purpose of the salon is to exhibit in a community of wealth and leisure the things that are new and different in the highest type of coachcraft. In it will be displayed the latest and finest creations for these two chassis by body designers of the Fisher and Fisher-Fleetwood organizations.

Initiation of the salon has been prompted by the success which has attended similar displays in New York, Chicago and Washington, where every facility has been available for the development of the preference of the individual, and where automobile coachcraft can be studied in artistic surroundings and removed from the atmosphere of the mart.

Creations from Nature's Studio

For the current season the Cadillac company has selected as the motif of its most original coachwork, "color creations from Nature's studios." Birds, flowers, midnight skies, minerals, ocean waters and rare butterflies furnish the color theme of the bodies, which is faithfully carried out in the color and design of upholstery and hardware, and wherever possible in inlaid figures of the interior walnut paneling.

+-+-+- *Arbitration Rears Its Handsome Head* +-+-+-

THE mere spectre of litigation is enough to give the average dealer, garage man and service man the "willies." The reasons are quite well known, chief among them being the costliness of such procedure, the breeding of ill-will and the loss of customers and profit. Whether or not less fearful days are in store for the trade in this respect is yet to be seen, but at least it is encouraging to observe that in one important quarter arbitration has reared its handsome head.

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BACK of the rearing is the Automobile Merchants Association of New York, Inc., which has been assisted in its venturesome project by the American Arbitration Association. Rules have been devised and the arbitration plan inaugurated in the automotive industry.

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THEREFORE a timely article has been prepared on the subject in which the workings of the arbitration plan have been detailed. Look for it in the Jan. 19 issue under the heading "The Trade Ventures Into Arbitration."

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ANOTHER interesting article, "Guess Again If You Think Guess-Work Pays," deals with a Denver service station owner who has eliminated guessing in hiring help, in handling work and in the management of his shop. It's something for the service man to look forward to reading.

After Eatin' the Eaton Banquet

ASSEMBLED here we have the sales personnel of The Eaton Bumper and Spring Service Co. photographed at the annual sales convention. Local managers and salesmen from the Eaton Branches in Atlanta, Boston, Chicago, Cleveland, Dallas, Denver, Kansas City and Philadelphia were called in to be congratulated on a most successful record for 1927. Substantial sales prizes were awarded to individuals and branches

Studebaker Makes Personnel Changes

SOUTH BEND, IND., Jan. 10—The following organization changes are announced by the Studebaker Corp. of America: Arthur J. Chanter, formerly assistant to the president, and more recently director of purchases, joins the sales department as manager of branches. Clete Mulick becomes manager of western branches, C. K. Whittaker manager of central and southern branches, W. K. Erdman manager of eastern branches and Kirk A. Metzerott manager of the New York branch.

Leslie Williams is now manager of the systems division of the sales department, and A. B. Connelly is systems manager of eastern branches. Systems managers will be appointed for the central and western branches.

P. A. Rumpf has been made branch manager at St. Paul, succeeding C. R. Arenschield, who has been transferred to the systems division; R. W. Walker is branch manager at Dallas and J. R. Ackerman has been made acting branch manager at Detroit.

Brisbin Vice-President of Columbus McKinnon Co.

CLEVELAND, Jan. 10—At a recent meeting of the board of directors of the Columbus McKinnon Chain Co., Don S. Brisbin was elected vice-president in charge of sales. He was also made a member of the directorate.

General Equipment Co. Sold

DETROIT, Jan. 9—The assets and good-will of the General Equipment Corp., Kalamazoo, have been purchased outright by G. H. Allen and H. H. Levene.

The new personnel includes: G. H. Allen, president and chief engineer; H. H. Levene, vice-president and general manager, and Homer J. Rowling, in charge of sales.

Present owners of the concern controlled and operated the Allen Electric Manufacturing Co. of Detroit, previous to its merger with General Equipment. There will be no change of policy.

Doty Wholesale Manager of Stutz Chicago Branch

CHICAGO, Jan. 7—The Stutz Chicago Factory Branch, Inc., announces the appointment of H. E. Doty as wholesale manager, according to F. D. Gerf, president of the branch. Mr. Doty was formerly connected with the White company as sales manager, both in California and later in Chicago. He had charge of three states as general manager of the Haynes Motor Co. of Chicago.

Merchandiser

I. W. MEIKLEJOHN, Fond du Lac, Wis., one of the earliest members of the Ford merdising organization, is noted for the originality of his merchandising ideas.

The following news article appeared in many southern Wisconsin daily newspapers a few days ago: "The speed of the new Ford proved to be the undoing of T. W. Meiklejohn of Fond du Lac yesterday when Traffic Officer Elmer Beck charged him with speeding on Highway 41 in the town of Byron at the rate of 72 m.p.h. In Judge Fellenz' court, Mr. Meiklejohn denied the charge of 72 m.p.h., but admitted that he was traveling as fast as 68 m.p.h.

McDougal Named AC Vice-President

DETROIT, Jan. 11—Appointment of T. G. McDougal as vice-president in charge of spark plug ceramic development has been announced by B. W. de Guichard, president and general manager of the AC Spark Plug Co. Mr. McDougal also will have supervision over the company's foreign plants located in Paris, France, and Birmingham, England.

Carlton Higbee Added to Directorate of Reo Car

LANSING, Jan. 7—At the annual meeting of the Reo Motor Car Co., Carlton M. Higbee of the Keene-Higbee Co., Detroit brokers, was added to the board of directors. All the other directors including the following were reelected; R. E. Olds, Richard H. Scott, Don E. Bates, H. T. Thomas, Clarence Triphagen, George E. Smith and Harry C. Teel.

Following the election the directors met and elected the following officers: R. E. Olds, chairman of the board; R. H. Scott, president and general manager; H. T. Thomas, vice-president; Don E. Bates, secretary and treasurer; George L. Brown, assistant secretary, and Dean M. Parsons, assistant treasurer.

McCormick with Chris Craft

NEW YORK, Jan. 9—R. M. McCormick has been appointed general manager of the local branch of Chris Smith and Sons Boat Co., Algonac, Mich.

His many friends in the automobile industry and trade are wishing Bob success in his efforts to interest automobile distributors in offering transportation by water as well as by land. And after that, it's but a short step to selling planes.

Business Looks Better

(Continued from page 10)

New York

SALES of motor cars in New York and vicinity have been comparatively slow during the month of December. Orders taken for the new Ford have been almost phenomenal but the expected release of buying power for other cars has not materialized to any marked degree. Users who are not interested directly in the new Ford are now waiting to see what new models will be offered at show time by other manufacturers.

Chicago

WITH the outlook for 1928 distinctly optimistic, dealers and distributors in the Chicago territory are ending December with sales for the month showing a gain over both November and December of last year. New car stocks are low, there being practically no holdover of models to be replaced at the national shows.

Used car markets have received a distinct shock as a result of the introduction of the new Ford.

San Francisco

SALES for December in this territory exceeded those of same month last year by 15 to 17 per cent, according to estimates of dealers' associations. This increase is due to arrival of new Ford, but greater part of gain will not appear on official figures since none of the new Fords were delivered or registered. There is generally optimistic feeling among dealers that new Ford will stimulate sales in other lines, but there is no actual evidence that it has done so.

Boston

MOTOR car dealers in Boston are entering 1928 with more cheerfulness than they had when December started. The lull in sales picked up after the Ford announcement cleared the air. They feel that Ford has set people thinking of buying now after months of expectancy. Some of the dealers learning that Ford dealers are not booking orders with promises to make allowances on old Fords have started out after this class of buyers. They are advertising generous allowances on used Fords.

New and used car stocks are not heavy.

Cleveland

SALES of both new and used automobiles in Cleveland have been exceedingly light during the past month. Totals will fall far below previous December records. Coincident with the introduction of the new Ford, there was a slight upturn in interest.

St. Louis

A MARKED improvement in demand for all classes of automobiles has been noticed here since the new Ford announcement. Dealers in all lines have profited by the relief of suspense created by advance publicity of the appearance of the new Ford, and the year has wound up in splendid shape and leaving a bright outlook for the early months of 1928 and new car stocks are about normal.

Detroit

NEW car sales in Michigan appear to have reached their lowest ebb of the year in December. Dealers also report a greatly slackening demand for used cars with a result that in many instances drastic price cuts are being made in used stocks as a means of moving them.

New Orleans

THE automotive situation in New Orleans at the close of the year is anything but satisfactory. The combination of the adverse effect from floods in this section, with its attendant depression of business here, as well as the adverse effect of the new Ford on the industry as a whole, has produced a very unfavorable situation. The new Ford has practically paralyzed sales of other makes of light cars here, and has completely demoralized the used car market.

Cincinnati

A DISTINCTIVE slump in the automotive business in Cincinnati in December has followed the Ford announcement which it was hoped would have a tendency to develop an upward spurt. Disappointment is keen with a majority of dealers, both in cars and accessories. Some of the older dealers, however, notably Frank Santry, see conditions as virtually normal.

Oklahoma City

DECEMBER was the Ford month. Despite the large sales which all local dealers had on hand before the car was ever seen or the price known, the sales that came in when the car was shown almost equaled these. Other light cars have suffered in losses of sales, but not to any damaging extent. Medium priced cars and the fours, as Dodge and Chrysler, were selling good, both new and used models.

Atlanta

NEW car sales during December were close to normal with most dealers, but conditions were inclined to be spotty. Cars of the Chevrolet, Buick and Studebaker class appear to have had better business in December, 1927, than in December, 1926, while higher priced cars enjoyed about the same demand.

Chrysler Cuts Prices

NEW YORK, Jan. 11—A drastic cut in prices of Chrysler Models 52 and 62 was announced today at the New York automobile show. The new prices follow:

Model 52

2-door sedan $670, coupe $670, roadster $670, touring $695, 4-door sedan $720, de luxe coupe $720, de luxe sedan $790.

Model 62

Business coupe $1,065, roadster $1,075, touring $1,095, 2-door sedan $1,095, coupe rumble seat $1,145, sedan $1,175, landau sedan $1,235.

Minneapolis

THE automobile business in this locality district is at a standstill. The snow is too deep to sell new cars extensively and there is no market for used cars under weather conditions. However the feeling of optimism is strong. In prospect the situation is far ahead of a year ago. Entrance of the Ford samples, and the arrival of the new Chevrolet have had no especial effect on the situation.

Los Angeles

SOUTHERN California December sales are considerably below last month, being poorest December in this territory for years. Ford showing failed to bring stimulus that was expected to business generally. Orders for new Fords on file with deposits beyond all expectations. Many distributors report tendency on part of buying public is to hold off expecting Ford price announcement.

Seattle

AUTOMOBILE dealers in Seattle and the Pacific Northwest agree that they will sell more cars in 1928 than this year, and expect this increased business will begin right after the New Year. Ford's announcement has eased the situation somewhat, but public buying cars under $1,000 is still in a watchful, waiting mood to see what Chevrolet will do.

Denver

TRADE conditions are still very poor in Denver and most of Colorado, as far as the motor car business goes. The coal strike and its consequent labor disturbances may be somewhat to blame, but the general feeling is that the fault lies deeper than that. The coming of the new Fords of course, brought a large number of orders for these cars, but the date of delivery is so indefinite that there has been no apparent effect upon trade in general.

Kansas City

NEW car sales in December were 15 to 20 per cent better than a year ago with the usual after-Christmas slump now prevailing. The arrival of the new Ford model has cleared the atmosphere and dealers report finding less sales resistance from the car than from the rumors preceding its appearance. The used car situation is the best here in years.

Milwaukee

OPINION as to prospects in 1928 is practically unanimous that it will be a good year. Distributors and dealers look forward to probably the keenest competition in their entire experience, but they are prepared to meet it, having come through 1927 with a result more gratifying than expected. At the opening of the year, new car stocks are in no wise uncomfortably large, so far as can be ascertained. December sales were sufficiently large to absorb any surplus.

Prosperous 1928 Is Seen By Young

DETROIT, Jan. 11—"America's conception that the only lasting prosperity is that in which the greatest number of its people can join is generally expected to attain the broadest level it has ever known in 1928," said DuBois Young, president and general manager, Hupp Motor Car Corp., in a statement made here today. "Viewing the outlook from its various angles leads irresistibly to the conclusion that 1928 will be a good year for business generally.

Evidences of Prosperity

"We see the evidences of prosperity on every hand in bank balances, savings deposits, life insurance, outstanding, good prices for large agricultural crops, tremendous ability of the public to absorb new security issues, continued great building activity, new peaks of stock exchange prices and the ease of money generally.

"As the automobile industry represents a vital phase of contemporary life, and is the nation's largest single industry that can be classified, its expectations are naturally of prime importance. The year 1928 should be the largest the automobile industry has ever known. It should also be a successful one. This will accentuate greater activity, of itself, in the steel, petroleum, rubber, glass, leather upholstery, aluminum and other industries dependent to a greater or less extent on the motor car for their own business."

"Our consumptive capacity to rise in 1928. Living standards are still undergoing changes. The prosperity that has existed for several years has accentuated a trend initiated in no small part by the automobile. New standards are supplanting the old and constantly adding to the necessities of our people."

General Tire & Rubber Co. Sales Show Big Gain

AKRON, Jan. 10—Sales of the General Tire & Rubber Co. for the fiscal year ended Nov. 30, 1927, totaled $23,692,500, an increase of approximately $4,000,000 over the previous year. Most of the gain was made in pneumatic tires. Net profit was $2,524,325, after depreciation, interest, etc., but before federal taxes.

W. O. Rutherford Resigns

AKRON, Jan. 11—W. O. Rutherford, vice-president in charge of sales of the B. F. Goodrich Co. since 1917, and a former president of the Rubber Association of America, announced late Tuesday his resignation to take effect immediately.

November Output Figures Lowered

WASHINGTON, Jan. 12—Automobile production during November, based on figures furnished the Department of Commerce, totaled 108,903 passenger cars and 24,299 trucks, or a total of 133,202 cars and trucks compared with 256,300 cars and trucks produced in November of last year. In announcing the figures, the department points out that they do not reflect the exact trend of production, due primarily to the Ford factories curtailment. Production in factories other than the Ford company was also somewhat curtailed due to inventories.

Comparative figures for the first 11 months this year with a similar period of last year show the total production during 1927 to be 3,259,317 compared with 4,130,863 cars and trucks produced the first 11 months of last year. Truck production during the current year totals 427,200 compared with 461,960 trucks produced the first 11 months of last year.

Canadian Production Down

Canadian production in both cars and trucks reflect the shut down in the Ford Canadian factories, the November passenger car production being 5173 compared to 6774 in November of last year.

John Cleary Says—

Suppose retail automotive salesmanship had been as finely developed as automotive engineering, production, advertising and wholesale distribution—

How many more automobiles would have been sold in 1927?

How many more accessories? How many more pieces of shop equipment?

Nobody can answer those questions accurately.

But it is an absolute certainty that the correct answer would run into many thousands of units, representing a volume of many millions of dollars.

Chalk that loss against inefficient retail salesmanship.

How much of the loss was yours?

Opinions of Automotive Executives

CONFIDENCE that 1928 would be a big production year for automobiles was almost unanimously expressed by the executives in attendance at the opening day of the New York Show. The company leaders were canvassed by representatives of MOTOR AGE in quest of a cross section of the best opinion of the industry on current conditions and the outlook for the year.

The note of doubt that underlay many of the predictions made a year ago was largely lacking as the men of the industry gathered for the annual exhibition. On all sides the opinion was voiced that the prevailing uncertainty that influenced sales in 1927 had been overcome, and that buying in the early part of 1928 would be on an extremely high level.

An evidence of the auspicious beginning of 1928 was the estimate of freight car requirements in the first quarter made by traffic managers in the Great Lakes region. It is understood that about 20 per cent more freight cars will be needed than in the corresponding period of 1927.

While it was generally agreed that there would be an unusually large market for automobiles this year—perhaps a record one—there were some expressions of caution. It was agreed that intensive selling effort would be more than ever needed if the automobile industry was to maintain and expand its position in competition with other industries. In other words, while the market is available, individual companies or even all companies as a group may be at a competitive disadvantage if intelligent sales pressure is not constantly applied.

The consequences of price cuts were also take into consideration. It was heartily hoped and believed that after the changes coincident with the opening of the show, further changes would be avoided and lists stabilized. The experiences of other years, when the cry of "price war" restricted buying, were kept well in mind.

It was also felt that in view of the very low lists now in effect high production would be necessary for a majority of the companies.

Some of the individual expressions of opinion follow:

¶ **George C. Tenney, sales manager, Locomobile Co. of America.**—We have not yet set any definite production schedule for the coming year. We are waiting to see how sales shape up and will be guided accordingly. The price changes that have been made on a number of the newer models of cars create a healthy condition in the market, inasmuch as they represent actual reductions in costs of manufacturers who are thoroughly well equipped to handle mass production.

¶ **E. W. Shattuck, director of territorial development, Dodge Bros., Inc.**—We expect a production of 375,000 cars this year, which will exceed by 40,000 the company's previous highest production record. We are swinging into full production just as fast as possible and increased body production now under way will enable us to produce at a still higher rate before the month is over.

General conditions affecting all industry and the automobile business particularly are sound.

Our dealers have more to offer the public than ever before, as we now have three distinct lines with which to interest the public.

¶ **R. H. Grant, vice-president of Chevrolet Motor Co.**—We look forward to the best Chevrolet year we ever had. We are planning for a production of well over a million cars and trucks during 1928, as compared with approximately a million even in 1927, our best year up to this time. There is every reason to expect that the industry as a whole will produce more units this year than last. The country is in a prosperous condition and the situation, in my opinion, will remain good.

Used cars will probably present a more serious problem this year than last, which is only what we can expect as a natural consequence of a higher production of new cars.

Prices will not change greatly from established levels in the near future. We do not expect to make any further changes in Chevrolet prices. Following recent plant extensions, Chevrolet this year is in a position to produce 1000 more cars a day than in 1927.

¶ **F. E. Moskovics, president, Stutz Motor Car Co. of American, Inc.**—I can not see 1928 as a boom year. I think 1928 will be an unusually good presidential year, but not a boom year. We are planning a production of 6500 units and our dealers are in excellent shape to jump right into the merchandising of that output.

We gave our dealers four months' notice that we were bringing out the new car, and as a result they have cleaned up stocks of new and used cars and are ready to go. Taken as a whole, 1928 should be a good year for Stutz.

¶ **R. T. Romine, general sales manager, Hudson Motor Car Co.**—With its new models in both the Essex and Hudson lines, we are fronting a record year. Essex and Hudson should have the largest production of any year.

Both country and city sales should be generously large in 1928, following the experience that Hudson has had in the past year. That the business this year will be extremely competitive, particularly in the low-priced field, is evident, these executives believe, and it is yet too early to anticipate the course that it will take.

¶ **E. L. Cord, president, Auburn Automobile Co.**—We expect to build and sell about 35,000 vehicles in 1928 as compared with about 25,000 last year. Auburn dealers have extremely low new-car stocks at the moment, Mr. Cord said, while their used-car stocks are very favorable.

Improvement of service methods is one of the most important problems facing the industry today and manufacturers will devote considerable energy to this task during the coming 12 months.

¶ **John N. Willys, president, Willys-Overland, Inc.**—The total output of motor cars in 1928 should exceed the record figures of 1926. Causes which retarded car sales in 1927 have been removed and manufacturers have adjusted themselves to conditions as they are likely to obtain for some time to come. It is unlikely that the industry will go through a period of uncertainty similar to the past year for years to come.

Material changes have been going on in the industry during the past 12 months which have slowed down production to a point where it looks as if demand had more than caught up with supply.

Prices established by manufacturers for 1928 should remain at about an even level for the year. In general, prices are apparently as low as present standards of quality and present capacity output conditions will warrant. If price drops are to affect quality standards they will be inadvisable in the motor car market of today.

¶ **William T. Young, Jr., assistant sales director, Marmon Motor Car Co.**—We are now turning out 200 of the Model 68 Marmons per day and 100 of the Model 78, and this will be stepped up as the selling season gets into full swing. We closed 1927 with a 230 per cent increase in units manufactured over the previous year, and are all set to make a new and better record this year. Our present plans call for a production of between 40,000 and 45,000 units during 1928 and recent expansion of sales plans will aid materially in selling this greater output.

¶ **Paul G. Hoffman, vice-president in charge of sales, Studebaker Corp. of America.**—I look for a very material increase in production by Studebaker this year as compared with 1927, although it is a bit too early to try to make specific estimates.

Interviewed at the New York Show

The automobile industry entered a new period several years ago in which basic engineering development and scientific research became essential as a part of the activity of every individual manufacturer. With constant change apparently the permanent program of the industry, those companies are likely to survive and be successful which can make constant changes on an intelligent, planned basis resting on a foundation of sound research engineering departments.

New car stocks in the hands of Studebaker dealers are lower than they have ever been before, while the used-car situation is not bad. Conditions as to number of dealers in a given area and size of territories, must be made such as to permit the retailers to make a good profit under normal conditions. It is toward this end that Studebaker's 1928 factory sales program is being directed.

Studebaker officials believe that prices will remain stable in that field in which the Studebaker lines are competitive.

¶ **Rufus S. Cole, general sales manager, Hupp Motor Car Corp.**—Stabilized retail conditions should follow quickly the announcement and display of new cars at the New York show. Buyers will have a chance to see the new offerings and determine their purchases without the restraining influence that the expectancy of new models has exerted during a large part of 1927.

This should have an immediately beneficial effect on used cars. Many persons who might have bought used cars in the latter part of 1927 undoubtedly waited to see the new low-priced cars. They now have the opportunity to decide. How the used cars fare remains to be seen.

Lower prices at which some lines are being offered will not have a great effect on sales.

Hupp Motor Car Corp. goes into the first quarter of this year on a high manufacturing basis. In this we are helped by the fact that new models introduced late in 1927 made the last quarter of that year the largest in our history. Our dealers maintained a high sales rate and their stocks of both new and used cars with demand continuing, justify early high production by the factory.

We have added 300 new dealers in the past three months and will add 500 more this year.

The outlook is generally good. There are increasing evidences of better possibilities in the farm market and improvement in the industrial markets is certain to result as the manufacturing groups increase operations.

¶ **J. S. Bigsby, assistant general sales manager, Gardner Motor Co., Inc.**—We are looking forward to our best year and are of the opinion that we will benefit from the jockeying for position that has been been taking place in the lower price field.

We have been able to place on the market an eight-cylinder car selling for the price of a medium-sized six and the response from the public thus far has been very gratifying. We are quite confident that we will produce and sell more cars in 1928 than we did in 1927. We do not contemplate further price changes.

¶ **H. M. Stephens, general sales manager, Cadillac Motor Car Co.**—That there is a greater potential market in 1928 than there was in 1927 is an undeniable fact. But it is also an undeniable fact that much of this market will be passive. This means that there are thousands of people in this country who will buy new automobiles this year if they are subjected to intensively active salesmanship. Otherwise they will get along with their old cars and defer the purchase of new ones. In other words, the big task of our industry this year is to convert this substantial passive market into an active one. And, just as MOTOR AGE has been pointing out during the last several months, this can only be accomplished through more active and more intelligently-directed retail salesmanship. The success of each unit in the industry—and, as a consequence, of the industry as a whole—will be measured more than ever during 1928 by the ability of the retail salesmen in each unit to transform this host of passive prospects into actual buyers.

¶ **Sid Black, vice-president, Chandler-Cleveland Motors Corp.**—We anticipate a 40 per cent increase in Chandler-Cleveland production for the year, and a record year for the industry as a whole. Chandler now has 110 dealer outlets abroad, which assures that the company will enjoy a sizeable and growing export business.

¶ **F. D. Soper, assistant general sales manager, Velie Motors Corp.**—We are looking to 1928 as the most promising year in our history. Our last year's business was 22 per cent ahead of the previous year, and we are confident we can show as great an increase for 1928, bringing our production up to 7500 or 8000 cars.

General business conditions are good throughout the country. There has been a great improvement in the South, which is now demanding better cars and we have recently opened four new distributorships in response to this demand. Conditions in the motor car field are especially good with Ford back in production. When cars are moving in the low-priced field, the demand for quality cars is stimulated. Our plant is busy on a full production basis.

¶ **W. H. Patterson, vice-president, Elcar Motor Co.**—The reports received from every section where we have distribution indicate increased sales this year and there is a greater activity in the export field. We find that the public is becoming more discriminating and is demanding greater individuality in cars, and our line for 1928, which has already been announced, is based on this idea. Sales up to date have necessitated a full production schedule for us. We are satisfied with present conditions affecting the motor car industry. Our dealers are in good shape with low stocks of both new and used cars.

¶ **Charles A. Tucker, general sales manager, Peerless Motor Car Corp.**—With the final and decisive squelching of the merger rumors and the installation of a new management, under the leadership of Leon R. German, Peerless is starting 1928 with better prospects than for many years. A program of expansion is already under way. Hand in hand with the improvements and refinements in manufacturing inaugurated by Albert Misch, who helped to build the first Peerless ever made and was recently reappointed manager of production after continuous service with the company since those first days, we are planning a substantial increase in our production schedule. Our aim is to build 1000 cars this month. There will also be a sizeable increase in our sales organization.

Our export business showed a 66 per cent increase in 1927. We are better organized in that department than at any time in our history, and we look forward with confidence to another big export year.

¶ **H. J. Shorter, assistant sales manager, Durant Motors, Inc.**—Definite production schedules for this year have not yet been settled. Inasmuch, however, as Star production over the past year has been rather limited, while the new Durant Sixes was being developed, it seems likely that a material increase in the Star Four production is to be expected during the year. The Durant Sixes, being to all intents and purposes a new product, no comparison can be made between the 1928 production and former productions, although plans indicate a much larger production of these lines than was ever made in the superseded Star Six. Actual estimates for the 1928 production are not yet available, however.

Price Announcements and Changes

NEW YORK, Jan. 7—The following car price announcements and changes were made at the show which opened here today:

La Salle

The following reductions in La Salle prices are in addition to those already published:

125-in. W.B. Fleetwood

Model	New	Old	Change
2-p. coupe	$3,000	$3,600	$600
5-p. sedan	3,200	3,800	600

Stutz

Prices are as published in the Jan. 5 issue of Motor Age with the exception of the following changes:

145-in. WB. Series

Model	New	Old	Change
5-p. sedan	$4,495	$4,995	$500
5-p. sedan	4,545	4,995	450
7-p. sedan	4,745	5,245	500
7-p. limousine	4,995	5,495	500
7-p. landau lim.	5,295	5,495	200

Pontiac

With the exception of two body types, the prices of all the new Pontiac Six cars remain the same as their predecessors. The exceptions follow:

Model	New	Old	Change
5-p. sedan, 4-door	$825	$845	$20
5-p. landau sedan	875	925	50

Oldsmobile

Prices of the new Oldsmobile Six follow:

Model	Price
Two-door sedan	$925
Standard coupe	925
Sport phaeton	995
Sport roadster	995
Sport coupe	995
Four-door sedan	1,025
Landau	1,085

Prices are f.o.b. Lansing, and the car prices include certain equipment items.

Franklin

Additional body models are expected to appear in the Franklin line, some of which will be shown for the first time in Chicago late this month. These will include a standard coupe and five-passenger sedan on the 128-in. wheelbase. Franklin is also offering several de luxe models which consist largely of present body models equipped with the usual extra equipment in various combinations at extra cost. Franklin is also quoting prices of $2,000 on the 119-in. wheelbase chassis and $2,050 on the 128-in. wheelbase.

Stearns

In connection with the show opening the F. B. Stearns Co. revealed the prices of the Stearns-Knight H and 8-85 series which were announced several weeks ago. Prices of the F-6-85 are unchanged. New list prices are:

Model	Price
8-85	
Roadster	$3,950
4-p. touring	3,950
Cab. roadster	4,550
4-p. coupe	4,550
5-p. sedan	4,650
7-p. sedan	4,750
7-p. limousine	5,250
Chassis	3,750
H	
Roadster	5,500
7-p. touring	5,500
Cab. roadster	5,500
2-p. coupe	5,500
5-p. coupe	5,500
5-p. sedan	5,500
7-p. sedan	5,600
7-p. limousine	5,800
Chassis, 137-in.	4,600
Chassis, 145-in.	4,700

Jordan

Price cuts ranging in amounts from $200 to $300 were announced at the opening of the national automobile show by the Jordan Motor Car Co. as applying to its Series R and JE. Only the Series J-1 remains unchanged. New and former prices and reductions are as follows:

Model	New Price	Old Price	Change
Series R			
4-p. Blue Boy	$1,495	$1,745	$250
4-p. spt. salon	1,295	1,595	300
2-4-p. Tomboy	1,395	1,595	200
5-p. sedan	1,395	1,595	200
Series JE			
4-p. col. coupe	1,995	2,195	200
4-p. per. coupe	1,995	2,195	200
5-p. Victoria	1,995	2,195	200
5-p. sedan	1,995	2,195	200

Dodge

Prices for four new models in the Dodge Victory Six line were announced at the show as follows:

Model	Price
Brougham	$1,095
Coupe	1,045
Coupe (with rumble)	1,095
De luxe sedan	1,170
De luxe brougham	1,170

A sport edition of the Senior Six sedan was also shown but no prices are available on this as yet.

Locomobile

Locomobile Co. of America has advanced the prices on the "8-70" 5-passenger brougham, and 5-passenger sedan $125, making this whole series price at $2,100.

Hudson

118-in.

Model	New	Old	Change
Coupe	$1,295	New model	...
5-p. coach	1,250	$1,285	$35
5-p. sedan	1,325	1,385	60
127-in.			
Landau sedan	1,650	New model	...
5-p. sedan	1,450	New model	...
Victoria	1,650	New model	...
7-p. sedan	1,950	1,850	100

Essex

Model	New	Old	Change
5-p. sport touring	....	New model	...
2-p. coupe	$775	$735	$40
5-p. sedan	795	835	40

Chandler

Big Six

Model	New	Old	Change
7-p. touring	$1,725	$1,695	$30
4-p. coupe	1,725	1,675	50
3-p. ctry. club coupe	1,725	1,675	50
Cabriolet	1,825	New model	...
7-p. sedan de luxe	1,925	1,795	130
Royal Straight Eight			
7-p. sedan	2,195	2,095	100
3-5-p. cabriolet	2,095	New model	...

Peerless

Model	New	Old	Change
6-60			
2-4-p. roadster	$1,195	$1,295	$100
5-p. phaeton	1,195	....	...
2-4-p. coupe rdstr.	1,295	1,345	50
5-p. sedan	1,295	1,345	50
6-80			
2-4-p. sport sedan	$1,395	$1,795	$400
6-91			
2-4-p. coupe	....	....	...
Victoria	....	....	...
5-p. sedan	....	....	...
7-p. sedan	....	....	...
8-69	**126 in W.B.**		
5-p. coupe	$2,345	$2,795	$450
133½ in. W.B.			
2-4-p.roadster	$2,245	$2,995	$750
7-p. sedan	2,545	3,095	550
7-p. limousine	2,645	....	...
5-p. sedan	2,345	3,495	1,150
7-p. sedan	2,545	....	...
7-p. Ber. Lim.	2,645	....	...
5-p. coupe	2,345	....	...

Hupp Century

Model	New
4-p. coupe	$1,865
4-p. sedan	1,875
2-door sedan	1,825
Cabriolet, rumble	1,955
Roadster, rumble	1,915
5-p. phaeton	1,905
7-p. phaeton	1,935

Special custom equipment including six disk wheels, $90 extra; including six wire wheels, $150 extra.

Nash

Nash prices remained unchanged at the opening of the show.

Gas, Oil and Hot Dogs—Drive In (*at the Show*)

SOMEONE remarked the number of stripped chassis on exhibit, and the ubiquitous wag just had to ask if in the calculations were included the many ladies in evening gowns.

●

At one car exhibit a hatless layman was mistaken for a salesman by one of the cash customers who shyly approached him with the quaint query, "How fast does this car go at 60 miles an hour?" Salesmen who overheard the remark laughed heartily but were cut short with bystander guffaws when the hatless one, coming to the rescue of his fellow cash customer, said, "It happens that I am familiar with this company's newspaper advertising. This car at 60 miles an hour goes 75."

●

The big turnout of evecutives on the opening day of the show was an evidence of the unusual interest on the part of the industry as well as the public in the new cars. Glimpsed on an hour's tour of the exhibits: Lawrence P. Fisher, Fred S. Fisher and Lynn McNaughton; Frederick J. Haynes, A. R. Erskine; A. R. Glancy, W. R. Tracy and B. W. deGuichard. Nearby, in the lobby of the Roosevelt, Ray A. Graham looked pleased as he surveyed the display of Graham-Paige models.

●

The upper floor of the Palace on opening day produced sounds reminiscent of a distant battle. The banging of shock absorber exhibits represented the heavy artillery; hammering recalled the lighter guns, while the miscellaneous sounds from the shop equipment exhibits completed the illusion.

●

One salesman for a high-priced car says he distinguishes between potential prospects and mere sightseers by their shoes and hats.

●

A. R. Glancy, president, and W. R. Tracy, vice-president in charge of sales of the Oakland Motor Car Co., were at the show early. Mr. Tracy expressed himself as particularly pleased with the business outlook for Oakland-Pontiac.

●

B. W. deGuichard, president of the AC Spark Plug Co., and Mrs. deGuichard, also arrived in New York Saturday and both attended the show Saturday. After assuring us that the business outlook is the best in the history of the AC company, Mr. deGuichard asked to be directed to the AC exhibit, where he got a genuine laugh out of the mechanical mannequins which are being used so effectively this year to present the AC story to the public.

The new cars making their official bow at this year's automobile show may be nifty, but to our way of thinking the wide variety of derby hats which men in the industry are wearing, are worthy of a display all their own.

●

Besides being a whiz bang good advertising manager, Earl McGinnis of AC spark plug fame can qualify for a job on the fire department.

Saturday afternoon a special display showing the workings of an AC air cleaner caught fire, and, for the edification of the large number of visitors in the booth at the time Earl put it out without the aid of water.

●

"Isn't it fine that the manufacturers make so many different kinds of cars, so everybody will be satisfied," was a tribute to modern automobile manufacturing as revealed at the show expressed by what the country weeklies described as a "fashionably dressed young woman."

●

Question as to wheelbase of models exhibited was heard frequently. Several women asked this question without asking about price, number of cylinders or one of the many others usually heard.

●

Several couples had a lot of fun nodding at each other from opposite sides of the Dodge Brothers Victory six sedan. The top is so low that tall persons standing on opposite sides can easily see each other's faces.

●

The adoption of standard gear shift by Buick and Dodge was deplored by a young man who boasted of his ability to drive in succession a Dodge, Buick and Packard when each of these models had a different arrangement of gear shift positions.

●

One salesman told visitors how his company had substituted aluminum for cast iron in a chassis unit to "reduce the noise," while a few booths away another salesman was telling a prospect that his company had substituted cast iron for aluminum in the same unit to accomplish the same result.

●

Heard in the booth of a popular low price "Six." "Don't you DARE to reduce the price of this car ONE PENNY. I only bought mine last month."

●

Black & Decker salesmen just smiled this year when Van Dorn salesmen demonstrated their electric drills by sitting on the drill press lever while the tools perforated steel bars. There's a reason!

Too bad Richard Bennett is not playing New York during the show. He could get a pointer or two from that accomplished showman, F. W. Koch, who is ballyhooing the Whippet on the balcony.

●

Fred Kast, of Firestone, was one of the earliest arrivals. He had the tires counted long before the first paid admissions began to trickle in.

●

At the Cadillac booth early visitors were greeted by a reception committee of Cadillac officials, including Larry Fisher, Steve Stevens, Bill Lewis and Jesse James.

●

Walter P. Chrysler, Joe Fields, Earl Wilson and Big Bill Mattimore were much in evidence both at the Chrysler booth in Grand Central Palace and at the de luxe special exhibit in the Commodore.

●

Bill Smith was kept busy showing off the many interesting tricks incorporated in the new duPont.

●

One of the handsomest men at the Studebaker dinner was Clint Miller, who has charge of the commercial car business in the Philadelphia territory.

●

Many old friends in the industry greeted George Howard in the Whippet booth on the first floor of the Palace.

●

In circus lot argot, plenty of "umpchas" paid admission to the Palace on opening day to see the new Ford.

●

On the other hand, one damsel was heard protesting to her escort that she would not leave until he saw the new Wills Ste. Claire.

●

Small wonder that M. F. Rigby was happy over the success of the Studebaker dinner on opening night. It was a wow.

●

Fred Van Fleet was handicapped by the fact that things were happening at the Peerless factory in Cleveland the day the show opened. But Van was happy over the outcome.

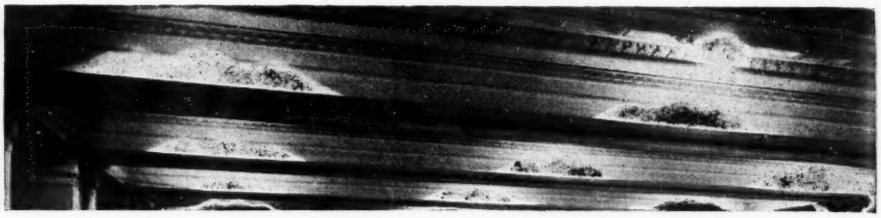
●

After seeing C. K. Brauns in his hard hat, Ye Editor of MOTOR AGE thought he looked unusually handsome in his'n.

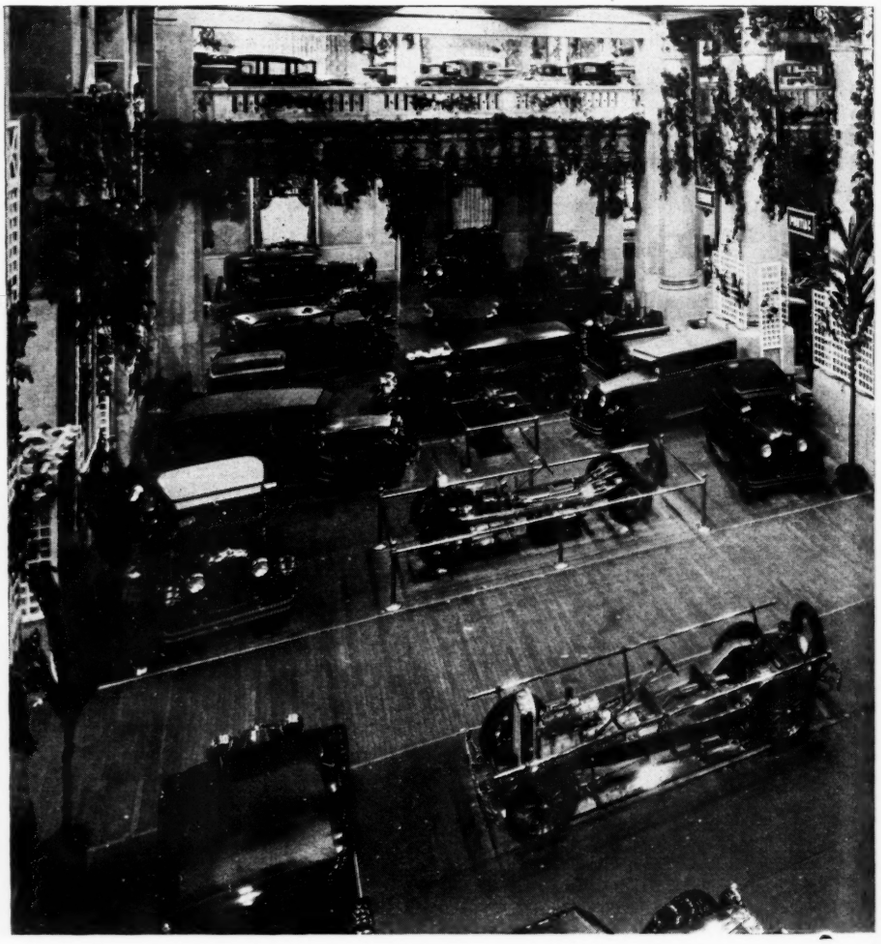
●

Jake Newmark was one of the first to arrive and one of the last to leave the show on opening day. On leaving he was heard to advise all and sundry to take a good look at the new Durants.

[By John Cleary]



The Industry



NEO-PHOBIA—a fear of the new—is decidedly not an affliction of the automotive industry. The men in this industry are not influenced by the old scheme of things under which we lived, thought and worked before the war. They are actively aware of the truth that we are now living in an era of expression—not repression; an era of "extravagant living, high wages, motor cars and radios for everybody, less work and more play, reckless youth, restless style, nimble dollars, shattered records"—as a more analytic and more picturesque diagnostician than I has described it.

Those are the thoughts which any observant person must carry away with him after even the most cursory survey of the twenty-eighth annual New York Automobile Show which opened at the Grand Central Palace on Saturday, Jan. 7.

New things are so universal there that the men in this industry might more properly be described as neophiles, rather than neophobes—as those who love the new rather than those who fear it—as advance agents of a more eloquent individualistic expression, rather than obstructionists who continue to set great store by the policy of repression that you and I knew in our youth.

It is a new youth that this automotive industry represents—a youth that is not measured in terms of years of age but in terms of the freshness of outlook on life—a youth that is measured in the terms of the new things it is doing.

New things in body design. Bizarre, yet pleasing, color effects. Deeper, narrower radiator shells. Departures from the conventional in the size and shape of hood louvres. Narrower body pillars. Form-fitting or saddle spring seats. Adjustable steering columns. Adjustable front seats. Cowl lamps mounted on a polished metal surcingle passing over the body and making the division line between cowl and hood. Wide one-piece fenders. Chromium plating for exposed metal parts. Coincidental locks. Read the details of these and other improvements and refinements in Mr. Stillman's article in this issue.

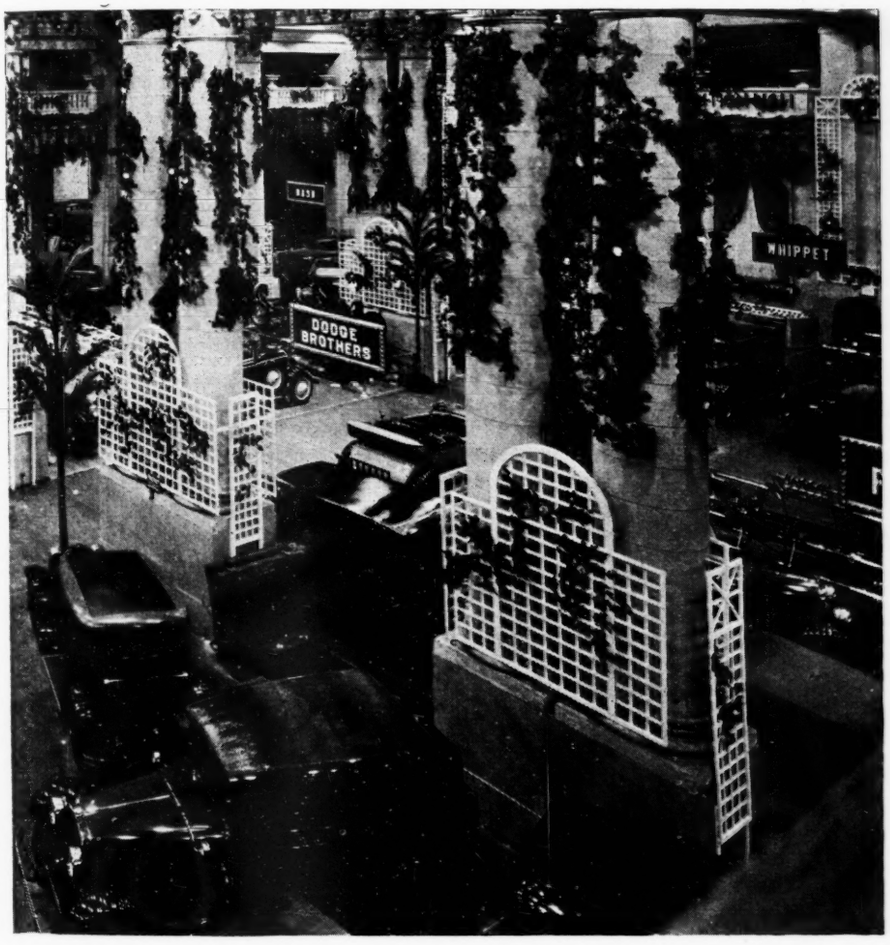
New things in mechanical construction. Increase in engine power. The predominance of the aluminum piston. Vibration dampers. Four-point engine supports. Pump fuel feeds. Heat control. Dual carburetors and dual manifolds. Cleaning up of electric wiring. Improvement of cooling systems. Crankcase ventilation. Stiffer frames. New form of steering wheels. Four-wheel brakes standard. There is an authoritative article on these mechanical improvements by Mr. Heldt in this issue.

New things in accessories. The manufacturers of accessories have apparently been thoroughly cognizant of the changes and they have been supplying us with photographs and descriptions of the latest things added to the modern motor car. Recent and coming issues of MOTOR AGE will keep you posted on the latest advancements in this department. See Mr. Swift's article.

New things in shop equipment. Tools designed to handle the 20 most frequently executed repair operations. Brake-adjusting, car-washing and greasing equipment. Small tool field expanded. These and

The illustration shows an attractive view, taken from a balcony, of the first floor exhibits at the twenty-eighth New York Automobile Show

Exalts *the* New



other developments in the equipment field are outlined in Mr. Dumas' article in this issue.

There were 274 exhibitors in the Palace. Forty-three makes of passenger cars and eighteen makes of trucks were offered. The balance of the exposition was comprised of 156 accessories exhibits and 56 exhibitors of service and shop equipment, and a taxicab display. The Motor & Accessory Manufacturers Association, which sponsors the bulk of the parts, accessories and sundries display, cooperating with the National Automobile Chamber of Commerce, may well be complimented.

The whole exposition was, as usual, under the personal direction of the veteran manager, Sam Miles, who had declared that it was his most gratifying effort —a truly cumulative result of the 27 years of genuine co-operation in the industry.

The shop equipment section was open to the trade exclusively from 10 a.m. to 5 p.m., the public being admitted to that section only from 5 p.m. to closing time.

The special days for the week were: Monday, Dealers' Day; Tuesday, Aviation Day; Wednesday, Society Day; Thursday, Army and Navy Day and S.A.E. Day; Friday, Theatrical Day, and Saturday, Civic and Closing Day.

New passenger cars on display at the show have been described in MOTOR AGE as follows:

This issue: Moon, Graham-Paige, Velie, duPont, Star and Durant.

Last week: Auburn, Chevrolet, Dodge, Elcar, Essex, Falcon, Hudson, Hupmobile, Kissel, Studebaker, Stutz, Pontiac, Marmon, Oldsmobile, Willys-Knight and Whippet.

In previous issues descriptions and photographs of the following lines were included: Chandler, Erskine, Ford, Marmon, Gardner, Chrysler, Moon, Pierce-Arrow, Velie, Hupmobile Six, Jordan Eight, Franklin, Packard, Cadillac, Peerless, Paige, Oakland, Buick and Nash.

From all of these, one notes that the size of an automobile is no longer an index of its value. Wheelbase now seems to have little relation to price. Bodies are no smaller inside than they have been, and in most cases they are actually roomier than their older sisters. Leg room has been increased by utilizing space that heretofore has been wasted. Form-fitting seats and arm rests are becoming fairly common.

The greater use of steel in body building has had an important effect in permitting an apparent decrease in size with an actual increase in roominess. Steel also permits the use of much narrower supporting posts, thus increasing visibility and safety.

A census of the show revealed a number of interesting developments. There was an increase in the number of straight eights. There was also a substantial increase in the number of models equipped with wire wheels. Virtually all the cars were equipped with four-wheel brakes. The number of convertible closed cars increased from seven last year to 20 this year. And there was a noticeable increase in the number of all types of closed cars. There were 14 four-cylinder cars, 131 six-cylinder cars and 72 eight-cylinder cars, of which 61 were straight eights and 11 V-type. Engines were represented as follows: L-head, 161; T-head, 5; F-head, 7; valve-in-head, 32.

Many Mechanical *Changes* Made *in 1928* Cars

Much of the Revamping Has Been Necessitated by Previous Changes Intended to Better Performance. A Comprehensive Review of the Improvements

By P. M. Heldt

MECHANICALLY the twenty-eighth show in New York offers much that is new and interesting. There has been a wholesale revamping of designs, the lower end of the price scale having been influenced perhaps by the long-heralded appearance of the new Ford, and the higher-priced class by keen competition on the basis of speed and acceleration.

Many changes in design were necessitated by previous changes intended to better the performance of cars. The average modern automobile is a pretty well balanced mechanism, and any change made with a view to increasing either its maximum speed or its getaway, usually necessitates changes in parts other than those whose redesign made this improved performance possible in the first place. Thus the progress of the industry constantly confronts the automobile engineer with new problems, and the solution of these problems in itself forms a part of the progress made.

A comparison with 1927 shows power has been increased in numerous cases, particularly at the two ends of the scale. At the upper end of the power range, engine outputs have been stepped up by increasing piston displacement, by increasing the compression ratio and, in the case of eight-cylinder vertical engines, by the adoption of dual carburetors and dual manifolds. At the lower end of the scale, which comprises most of the four-cylinder engines, there are also numerous instances of a considerable increase in power, which in this case has been achieved more generally by increasing the speed of the engine and its volumetric efficiency. In the larger class the actual horsepowers are now well beyond 100, the Lincoln rating at 110, the Stutz and the Chrysler 80 at 112 each, and the several new models equipped with the large eight-cylinder Lycoming engine at 115.

One of the most remarkable changes in engine design during the past year has been a strong swing to the aluminum piston—some 14 years after its introduction—which is now found on about 70 per cent of all new models. Aluminum alloy connecting rods, on the other hand, have made less rapid progress, although they are now being used by Hupp, Franklin and Continental on the new eight-cylinder engine of the latter. Continued improvement has been made in the cooling of valves, in that water jackets now generally extend completely around all of the valve seats, where formerly there was often a common wall between the inlet and exhaust valves. Dual valve springs are coming into more extensive use, which tend to prevent spring breakage due to spring surge. Among the users of such springs are Franklin, Jordan and Packard.

Vibration dampers continue to be used on the majority of six and eight engines, though the harmonic balancer has been eliminated from one of the General Motors models which formerly carried it.

A noteworthy improvement on the Lanchester vibration damper has been made by Chrysler, which makes it fully effective not only for one critical speed but for others as well. This consists in the insertion between the two metallic members of the damper of a lead-loaded rubber ring, a friction member which has a tapering section and therefore is pressed against the metal members the harder the higher the speed of the engine.

In recent years there has been a pronounced return to four-point mountings for engines, which had almost passed out of use a decade ago. The reason for this change in practice is probably that with the increasing use of closed bodies and the stepping up in car speeds, it has become necessary to stiffen the frames. A four-point engine support, together with a rigid crankcase, naturally adds greatly to the stiffness of the frame at the forward end.

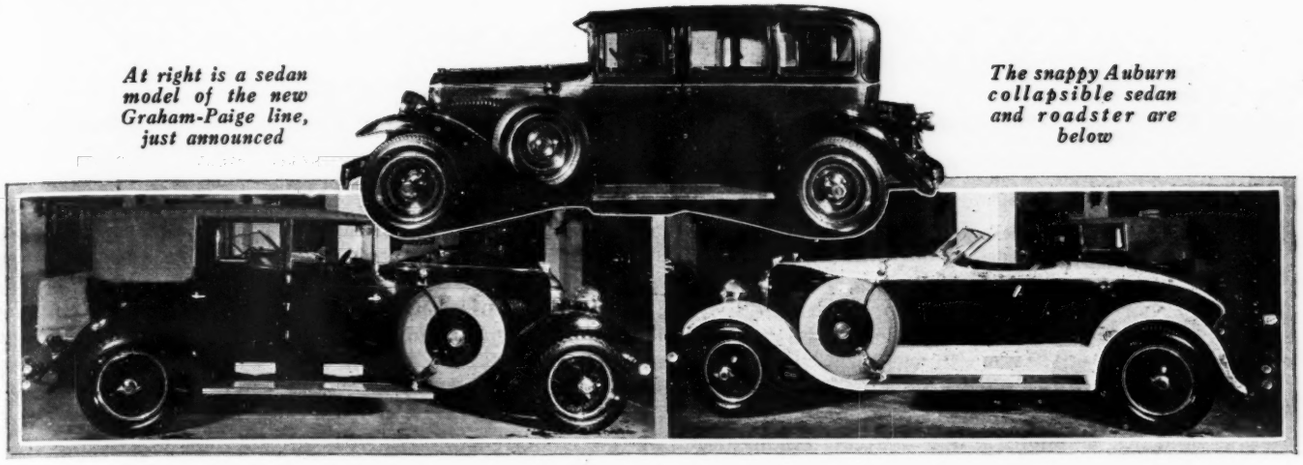
In connection with fuel systems, note is to be made of a trend toward pump fuel feed. On the Studebaker eight-cylinder model, the Oakland, the Pontiac and the new Graham-Paige, the AC diaphragm-type fuel pump, which was first presented to the public at last year's show, has been adopted as standard equipment, while the Stutz is fitted with the Autopuls electric pump.

Heat control is becoming a rather common feature on the larger engines. On the Studebaker there is a valve in the exhaust manifold at about the middle of its length. When this valve is closed (from the driver's seat) the exhaust gases from the three rear cylinders are compelled to flow through the jacket on the inlet manifold, whereas when it is open they escape directly.

Most noteworthy among changes in fuel systems is the adoption of dual carburetors and dual manifolds for practically all of the new eight-cylinder vertical engines. When this type of engine was first brought out, it was realized by most of the designers that distribution difficulties would be met, but inasmuch as the engines

At right is a sedan model of the new Graham-Paige line, just announced

The snappy Auburn collapsible sedan and roadster are below



These cars are participants in the changes made in mechanical design for 1928

were generally of large displacement and developed more power than any that had previously been used, the problem of manifolding was side-tracked for the moment. Experience with racing engines of this same type showed that the power could be materially increased by the use of two or more carburetors. This solution did not recommend itself for stock cars on account of the complication and expense, and a compromise was finally made by adopting a carburetor having two mixing tubes but only a single float chamber, in conjunction with a manifold having two uptakes, one feeding the four inner cylinders and the other the four outer ones. This makes the conditions of flow in each of the halves of the manifold exactly the same as those obtaining in a conventional four-cylinder engine.

The electric wiring of the ignition system has been "cleaned up," particularly on the smaller, lower-priced cars, and spark plug cable tubes are more in evidence on the engines of such cars. It was also noticed that soft rubber covers or protectors are being used more extensively on the insulators of the spark plugs, evidently to protect them from water spray and consequent cracking.

A good deal of attention has been given to the improvement of cooling systems. The thermosyphon system of circulation, which was in extensive use a decade ago, is now almost obsolete, the reason being the general trend toward multi-cylinder engines, to which this system is not so well adapted. Thermostatic control of the circulation is a common feature on the more expensive models. There is considerable variety in the location of the thermostat, the most common plan being to place the "bellows" in the water outlet from the cylinder head at the forward end of the engine. In the new Pontiac engine the cylinder heads are made in two castings, each comprising the heads for three cylinders. The object of this design is to make it unnecessary to disturb the ignition unit—which is located on top of the engine at the middle of its length—when it becomes necessary to remove the cylinder heads for the purpose of grinding valves or cleaning out the carbon.

The use of two-cylinder head castings made it necessary to provide a manifold for the return of the water, each branch of which is connected to one of the cylinder head castings. In this case the thermostat is arranged horizontally in the manifold, which latter connects to the radiator top tank at one side, so as not to interfere with the radiator fan. Evaporation cooling has not yet found a place in regular production, but some of its advantages are seen in the new Pontiac and the new Oakland. By adopting a cross-flow type of radiator the loss of alcohol from the radiator in winter driving is minimized.

Circulation pumps are now generally combined with the radiator fans in order to save one drive. On the Stutz the pump is mounted at the side of the crankcase in accordance with the older practice and is secured by means of a necked and flanged cover plate, which also forms the pump inlet, to a flange cast on the flywheel housing. This places the pump at the extreme rear of the engine, so it can be conveniently driven through a long flexible shaft and the water can enter the cylinder block without the use of piping. The Stutz, like most of the other eight-cylinder engines, has a water return manifold. Such a manifold also has been adopted on the Buick recently, which formerly had a single water outlet at the forward end of the cap. The thermometer bulb is located in a branch of the manifold near the rear end.

Radiators in many instances have been made higher and narrower, not with a view to improving their efficiency, but rather with a view to improving the general appearance of the car. In fact, it may be suspected that the efficiency of the cooling system has in some cases been impaired by this change in form, not that the cooling systems of the new cars are inadequate, but since with a very oblong radiator the sweep of the fan can cover only a comparatively small fraction of its surface, the fan certainly is not as effective as it might be with a radiator of more nearly square section. As a result of this change in the form of radiators, it is likely that fan shrouds will again come into more extensive use. Up to the present such shrouds have been confined to the more powerful cars, in which it naturally is somewhat difficult to get sufficient cooling capacity, but the newest Chevrolet model also has such a shroud.

Lubricating systems in general remain the same. One of the few automobile engines in which oil is forced under pressure to the piston pin bearings is the new Hupmobile six-cylinder, in which the connecting rods are drilled through the shanks. Engine lubrication was very effectively demonstrated at the show on a Velie six-cylinder engine, in which portions of the housings were cut away and replaced by celluloid windows. This make of engine, as is well known, is of the valve-in-head type, and the oil pump is located outside the crankcase. Oil is delivered directly through passages drilled in the crankcase walls to the main bearings, and by a pipe extending up within the cylinder block to the hollow rocker arm shaft at the top. As the oil works out through the rocker arm bearings, it accumulates in the valve chamber on the top of the cylinders and trickles down through the valve rod chambers at the sides, dropping onto the camshaft. Through the celluloid window

MANY MECHANICAL CHANGES MADE

the flow of oil to all bearing surfaces could be plainly seen.

Crankcase ventilation is now a feature of a great many engines. There are essentially three systems, viz.: (1) that in which ventilation is induced by leading a pipe from the upper portion of the crankcase into the air stream underneath the crankcase, giving a sort of ejector effect; (2) that in which a pipe from the crankcase is connected to the inlet system of the engine, and (3) that of the Franklin car, in which the air pressure of the cooling system is made use of. The first system, which employs the ejector effect, is found on the Chrysler 62 and 72, Oakland and Chevrolet, among others.

More and more of the clutches are of the single-plate type, which seems to have the advantage over other types of having the least spinning weight and probably also the lowest cost of manufacture. Many of these clutches now embody the feature of a flexible insert.

When the four-speed transmission with two silent speeds first made its appearance, the writer made the prediction it would see considerable application in the passenger car field. Up to the end of last year there was only a single passenger car model equipped with such a transmission, but during 1928 at least five different models will be equipped with it. Of the three makers now using it on passenger cars, two have been fitting it for about a year, one on a light truck model only. The writer confidently expects the use of this type of transmission in the passenger car field to grow, although with the large scale-operation of our passenger car manufacturers and the proverbial slowness of motion of large bodies, its wider adoption can be expected to come about only gradually.

There have been no changes of note in connection with rear axle design, the spiral bevel gear remaining the predominating type of final drive. Now and then a new model appears with a different drive as, for instance, the new Marmon with a hypoid gear and the Velie eight with a worm gear drive.

Frames are still being stiffened up in continuation of the movement begun when front doors were first adopted, and it was found that with the light frames then in use it was often only a short time till the front doors would not open and close properly. The problem, of course, is to secure the maximum rigidity of the frame structure without material increase in weight, and this has led to an increase in the number of cross-members and a variety of forms of such members. While some years ago there seemed to be particular need for strengthening the frame at the middle of its length, so as to prevent distortion of bodies and consequent trouble in the operation of the doors, more recently there seems to be particular need for stiffening the forward ends. In the writer's opinion this is a result of the adoption of balloon tires and front wheel brakes, which has brought in its train various forms of front-end vibrations. Tramping of the front wheels is transmitted to the forward end of the frame, which is distorted in consequence. It cannot be hoped, of course, to entirely eliminate this distortion, but by stiffening the forward end of the frame it can be reduced.

A frame of rather unusual design is used on the new Dodge Liberty 6. Not only are the side channels of exceptional depth and have comparatively narrow flanges, but the frame itself widens out in front of the rear wheels, following the lines of the body. This brings the forward mounting of the rear springs inside the frame side rails, on a cross-member.

In steering gears there appears to be a tendency to return to the type in which the mechanical advantage is constant throughout the range of steering motion. During the past two or three years a type of steering gear had come into use on many cars in which the mechanical advantage was less at the ends of the range of motion than at the center. This afforded two advantages, in that in all ordinary steering operations when the wheels have to be deflected through only a slight angle, the effort required to operate the wheel is comparatively small, and in that, on account of the greater mechanical advantage of the gear near the center, the gear is nearly self-locking. However, two developments in recent years have made this type of gear less desirable. One of these is that more and more cars are being driven by women, and these often have not enough strength to turn the steering gear when near one end of its range, where the mechanical advantage is less; the other is that with the increasing congestion in our streets, cars have to be maneuvered a great deal to park them in restricted spaces, and this maneuvering is more difficult with the lesser mechanical advantage of the gear at the end of its range.

There appears to be an increasing tendency to make steering posts adjustable as to slope, to adapt them to drivers of different size. This is readily accomplished by mounting the post at its lower end in a trunnion on the frame and providing an adjustable bracket on the cowl.

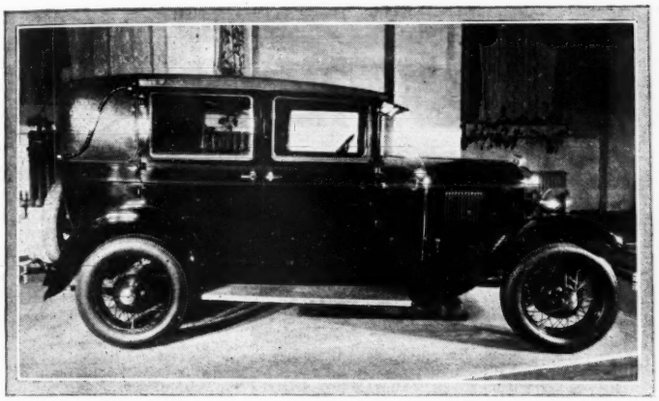
Steering hand wheels are changing in forms perceptibly. The old style wood rim wheel is losing in favor and a new type of wheel, with a flexible steel core surrounded by molded rubber, is gaining ground. This type of steering wheel has the advantage of a certain flexibility in the direction of its axis, which tends to reduce fatigue in the arms of the operator. Moreover, the rim can be grooved or scalloped so as to afford a firm grip, even when the driver wears gloves, and finally with a steel core the wheel, of course, is practically unbreakable.

There is also a tendency to enlarge the hub of the wheel, to permit of a more substantial construction of controls. In a good many instances there are now three control levers at the center of the wheel, the third lever being the headlight control. In some of the new models, however, including the Oakland, headlight control is by a foot switch.

So far as could be learned at the show, four-wheel brakes are now standard on all American passenger cars, with the exception of one in the high-priced and one in the low-priced field. The use of pressed steel for brake shoes is spreading.

Although the use of four-wheel brakes is now almost universal, there is still much variety in brake layouts. A good many cars have only the four brakes, one on each wheel, which can be applied either by means of the pedal or by means of the so-called emergency lever, and this arrangement seems to be accepted under all state laws, although many of them call for two independent brakes. On other cars, however, and the list is not confined to the high-priced class, the lever applies entirely separate brakes. The respective merits of these two systems seems to be one of the open questions of automobile design today.

Durant *Markets* Three Lines *of* Sixes



The four-door sedan of the new Durant 65 line. The wheelbase is 110 in.

New Offerings Are Known as Durant 55, 65, and 75, Ranging in Price From $795 to $1,550. Star Four is Continued

DURANT MOTOR CO. of New Jersey, has completed its program for 1928. The star Four will be continued with only moderate changes. Its wheelbase has been lengthened from 103 to 107 in.; engine output has been increased approximately 16 per cent without change in cylinder dimensions; the engine is now mounted on rubber and four-wheel brakes of the Bendix three-shoe expanding type are fitted as regular equipment. These brakes act on 11-in. drums and are operated by both the pedal and the emergency lever. A number of changes have been made also in the body, and the general appearance of the car has been improved, notably by increasing the height of the radiator by 1½ in. There are four body styles in the Star Four line, a two-door sedan, a four-door sedan, a business coupe and a business roadster, both of the latter being upholstered in leather. Prices on the Star line had not been set at the time of this writing.

In addition to the Star Four, there will be three lines of six-cylinder cars, all of which will be sold under the Durant name. They will be known, respectively, as the Durant 55, the Durant 65 and the Durant 65 and the Durant 75. All three are equipped with engines built by the Continental Motors Corp.

The Durant 55 will be turned out in three body styles, a two-door sedan selling at $795, a coupe at $795, and a four-door town sedan at $895.

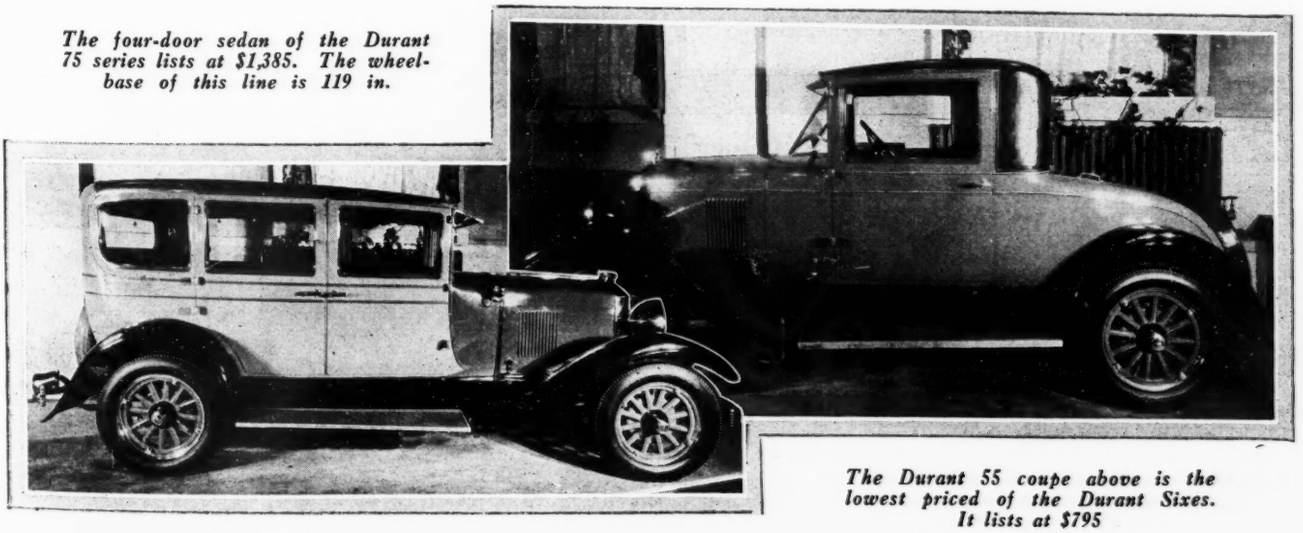
The Durant 65 line comprises eight body styles, a touring model at $795, a coupe with rumble seat at $975, a two-door sedan at $975, a cabriolet (with collapsible back) at $1,045, a four-door sedan at $1,075, a sport roadster with rumble seat and wire wheels at $1,025, and a four-door town sedan with five wire wheels and five tires at $1,175. The chassis alone sells at $725. The wheelbase of this car is 110 in.

The Durant 75 line will have only two body styles for the present, a four-door sedan at $1,385, and a four-door town sedan at $1,550. This model has a wheelbase of 119 in.

The cylinder dimensions of the engine on the Durant 55 are 2¾ by 4¾ in., which will be recognized as the same as those of the old Star Six, which this model succeeds. The mechanical specifications are much

(Turn to page 28, please)

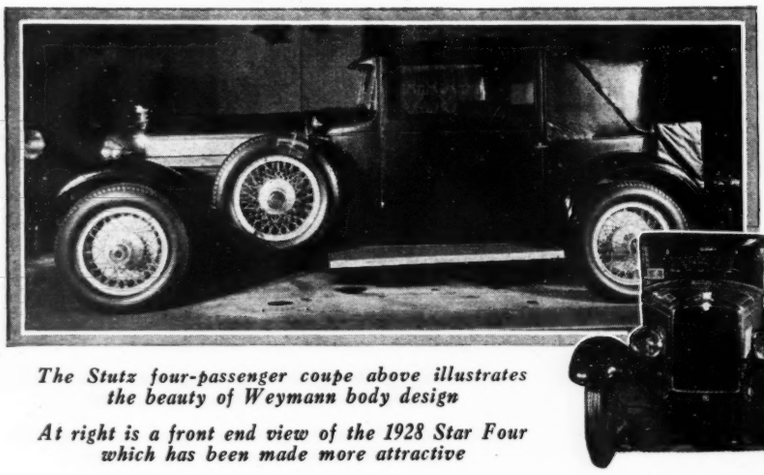
The four-door sedan of the Durant 75 series lists at $1,385. The wheelbase of this line is 119 in.



The Durant 55 coupe above is the lowest priced of the Durant Sixes. It lists at $795

Show

At New



The Stutz four-passenger coupe above illustrates the beauty of Weymann body design

At right is a front end view of the 1928 Star Four which has been made more attractive

IN the more than 200 body models shown at the New York Show, color harmonies play a very important part, just as they have in the past two shows. There are no very distinct trends indicated in this year's display as to the future of color treatment, since by nearly every maker, and sometimes on each body model, a quite individual treatment has been employed which, it seems, agrees only by chance with the methods employed on bodies of other makes or even on bodies of the same make.

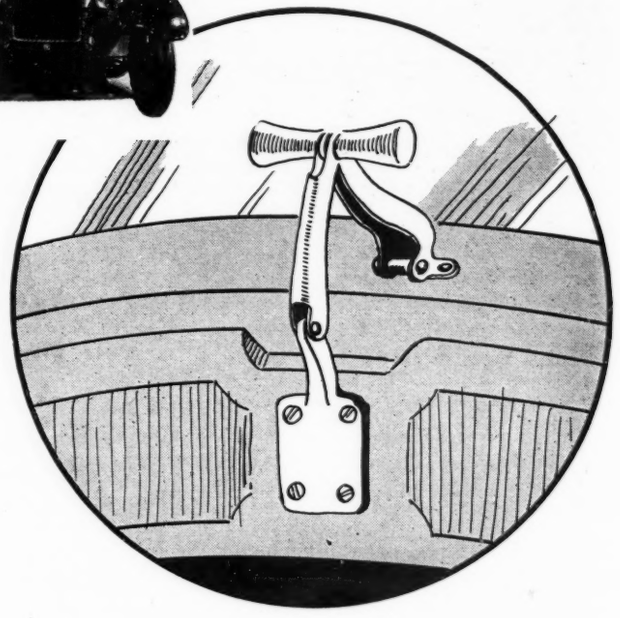
The same general opinion applies to moldings and belts. There is apparently no one treatment which offers entire satisfaction, but each designer apparently has endeavored to develop a quite original treatment which will still be in perfect harmony with the rest of the design.

A census of the main colors used on bodies indicates that shades and tones of green are most popular with blues following in very close order, with 29 per cent and 23 per cent of the total respectively. Then come grays with 12 per cent; browns and tan with 11 per cent; black with 9 per cent; red with 9 per cent, and yellows and cream with 7 per cent.

An interesting point in this tabulation is the relative popularity, at least for show purposes, of black. There are so many gorgeous colors filling the display booths that an all-black car with, possibly, fine hairline stripes of a light color, becomes very conspicuous.

The importance which color has in car sales is well evidenced by the fact that over 50 per cent of the exhibitors permit full color options on their models without extra cost. In addition to these there are a number of makers who provide from two to five so-called standard color options on each model so that usually the prospective purchaser of a car is favored with a relatively wide choice of finishes to harmonize with his wife's fur coat, her complexion, or any other desirable combination.

It should be added that in connection with the color census referred to above, there is a strong possibility of confusion in attempting to decide which is the main color employed on a particular car. In many models two colors are used in approximate proportions—one covering the hood, cowl and being used for trim, while the second and contrasting color is employed on the body proper. This treatment has now been adopted in modified form by a number of makers. Another rather startling color treatment is to have the body, cowl and hood in one color with a 3 or 4 ft. wide band of contrasting color swept down across the middle of the body.



Facilitating ventilation is this Star windshield ventilator toggle. The sketch shows the windshield in the partially open position

Following the trend of public demand indicated at the salon, convertible models play a much more important part in this year's show than ever before. Nearly 10 per cent of all bodies shown were of the convertible style and about half of all makers are now offering at least one model of this type. Some of them were very interesting, too, the Auburn 8-88 convertible sedan, for example, appearing to be the equal in general utility and engineering design of anything which was displayed at the last salon.

Possibly the most interesting thing about this show is the large number of new features which have been more or less simultaneously adopted by many makers. And the price at which the car sells appears to offer no indication as to what features may be found on it because they are scattered throughout all price classes.

Coincidental locks are to be found this year on Buick, Pontiac, Stutz, Essex, Studebaker and Erskine, among others. An effect of great depth and narrowness of radiators, obtained sometimes by actually changing the radiator dimensions and in other models by providing a false bottom, may be found on Marmon, Chevrolet, Cadillac, Dodge, Packard and Pontiac, as well as many others.

Relatively few are the makes of cars today which follow the one-time conventional practice of arranging hood louvres. In fact, they stand out from the crowd of variations which have been developed to give cars that look of individuality apparently so desirable. All

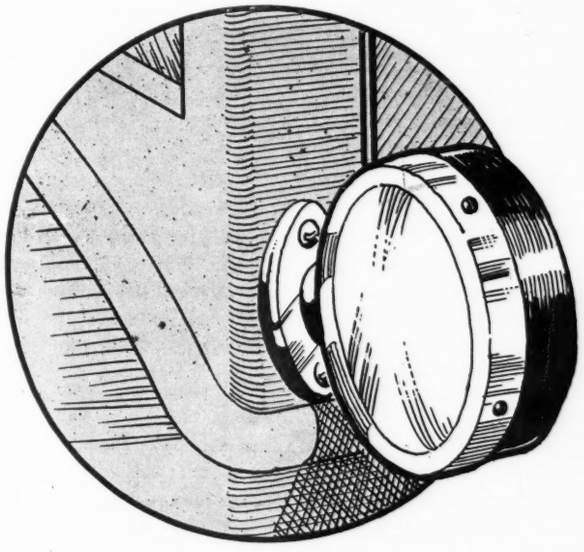
Reveals Makers Aim Effects in Design

Exteriors and Interiors of Cars Evidence the Productive Concentration of Factory Experts

By K. W. Stillman

sorts of combinations are employed, including vertical, horizontal and slant groupings of four or five louvres and various other means of obtaining proper air openings without employing the old-time methods. On one Chrysler model the louvres consisted of sets of three, spring-operated doors which, when closed, were set flush with the body, a method similar to Packard practice for several years.

Narrow body pillars to provide clear vision continue to get attention with very satisfactory results, and there



Illustrating the unusual mounting of Ryan cowl lights by Kissel

are numerous makes of cars in which the front corner pillars, at least, have a maximum width dimension less than the pupillary distance between the eyes, which is the *desideratum*. In all-steel bodies such as the new Dodge Victory models, this feature is quite evident, but many users of composite bodies have achieved the same end by employing bronze castings or similar structures at the front posts. Not so much attention has been given to between-the-door pillars, however, and many of them are still too wide to provide clear vision to rear seat occupants. From a safety standpoint this is not of great importance, but it should be more pleasant to ride in those few cars which have also made their center pillars as narrow as possible.

Seat cushions which slope down from the front to provide support beneath the knees have been adopted by such makers as Buick, Chrysler, Essex, Falcon, Hupmobile, Marmon, Oldsmobile and Moon, and should go far in making long rides more comfortable.

Realization of the very decided lack of standardization in the length of human legs is growing among designers so that more and more models are being provided with one or more means of adjustment for fitting the driver to his controls. Adjustable front seats, usually only the driver's half, are found now on many cars such as Chrysler, Buick, du Pont, Erskine and Falcon-Knight. Pedals which are adjustable for length are furnished in Marmons, Kissels and Franklins, among others; while adjustable steering columns are provided by Buick, Franklin, Hupmobile, Marmon and Chrysler, in some models, at least.

Chromium plating of exposed metal parts is being quite generally adopted, while windshields, hinged at the top and swinging outward, are being used on an increasingly large number of models. The polished metal surcingle dividing the hood from the cowl has been used for several years in the custom bodies exhibited at salons, but this year, for the first time, finds it being used generally to good advantage on production cars. Usually the band supports the cowl lights and, in many cases, if extra wheels are standard equipment, the surcingle branches to form supports for the wheels on each side of the car.

Wider fenders with full crowns and increasing use of one-piece items are noted this year. Arm rests for the outside of rear seats and, frequently, a folding arm rest for use with only two rear seat occupants, is another feature of past custom body practice generally adopted this year on production cars.

In addition to the items mentioned before which have been adopted by enough makers to indicate a trend, there were a number of original developments or adaptations found on particular cars which may or may not be adopted generally.

Entrance to the rumble seat on one Chrysler 80 model is made by a full door, following the practice employed by Auburn for several years. This rumble seat also has a folding cowl, half of which can be raised to effect easy entrance, but when lowered affords protection to the occupants.

A new fabricoid product furnished in colors and various designs is being used for interior linings, tops and tire covers. This is a fabric impregnated with pyroxylin with an embossed design and so treated that it is flexible and will not crack or break even when used on collapsible tops. It permits a much greater range

(Turn to page 30, please)

DURANT MARKETS THREE SIXES

(Continued from page 25)

the same all through, except that Bendix four-wheel brakes are fitted, but the bodies are entirely new. The radiator is of new design, with ornamental vertical and cross bars in front; the hood also is new and the general appearance is entirely changed. This and the Star Four have an amidships transmission, which Durant has featured for a good many years. The rear axle ratio is 4.87.

It may here be pointed out that all Durant six-cylinder jobs have interchangeable main bearings. All engines, including the Star Four, have Nelson-Bohnalite, invar-strut, aluminum alloy pistons, and all have force feed lubrication to main connecting rod and camshaft bearings and to the timing chain, which latter on all models is a Morse chain. Tillotson carburetors are used, as is Auto-Lite electrical equipment with Bendix starter drive.

The engine of the Durant 65 has a bore of 2⅞ and a stroke of 4¾ in., giving it a piston displacement of 185 cu. in., as compared with 169 cu. in. for the 55. It develops 47 hp. at 2800 r.p.m., and, the same as all other engines, is mounted on rubber. The 65 is a unit powerplant job and has a thermostatically-controlled cooling system. Other features of equipment include a gasoline filter and a Hall-Winslow oil filtrator, which latter is built right into the job.

Clutches on the Star and all Durant models are the now familiar Durant single-plate type, comprising a radially corrugated metal disk which is provided with sectors of friction material covering only about one-half of each side of the steel disk, the radial center lines of the sectors being at the crests of the corrugations. The springiness of the corrugated disk helps to insure smooth engagement.

The 65 has a conventional three-speed transmission which is manufactured in the plant of the Durant-controlled Warner Corp., Muncie, Ind. The transmission has a low-speed ratio of 3.32, a second-speed ratio of 1.77 and a reverse ratio of 4.2. Two metallic universal joints are used and these and the propeller shaft are of Spicer manufacture. The rear axle is of the semi-floating type, with spiral bevel drive gears, giving a reduction ratio of 4 4/9 to 1. Timken bearings are used on the pinion shaft and at the wheels, and ball bearings at the differential. Balloon tires of 29 by 5.00 in. dimensions are fitted on 19-in. wheels. The front axle has reversed Elliott steering heads. Steering is by a worm and wheel mechanism with a reduction ration of 11:1. The steering wheel has a diameter of 17 in. On this, as well as on all of the other jobs, the knuckle pins are provided with ball thrust bearings, instead of the thrust washers which heretofore have been conventional in low-priced cars.

All body styles on the 65 chassis are equipped with an automatic windshield wiper, a heat indicator and an electric gasoline gage on the instrument board and four snubbers. The sport roadster and the town sedan in addition are equipped with both front and rear bumpers and with five wire wheels, the extra wheel carrying a spare tire and a tire cover.

The engine of the Durant 75 has cylinder dimensions of 3⅜ by 4⅝ in. (248 cu. in.) and develops 70 hp. at the brake at 3000 r.p.m. This engine has a seven-bearing crankshaft, in which respect it differs from the 55 and 65 engine models.

A four-speed, twin-high transmission is used.

The equipment is the same as on the 65 model, except that the town sedan has wire wheel equipment, front and rear bumpers and Lovejoy shock absorbers all around.

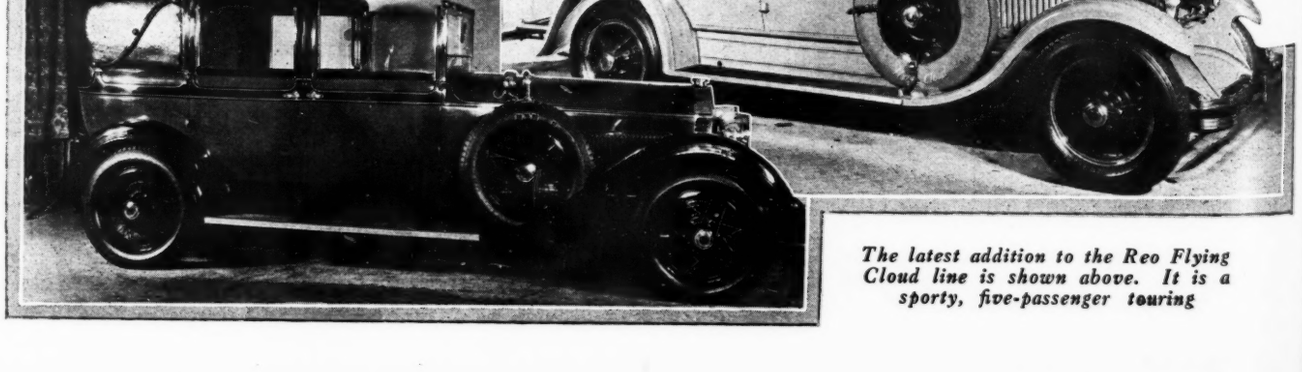
Reo Adds Flying Cloud Sport Touring

SINCE introduction of the Reo Flying Cloud line last spring this chassis is now available in a touring car model, a five-passenger sport touring being the latest addition to the line. It is upholstered in red grain colonial leather, has a Victoria top and English type windows, crank-operated. The top itself is of the disappearing type. Finish of the model exhibited at the show was in gray with pin striping in red on the fenders and splash shields, in addition to the body striping proper. A red wickerwork panel is included between the upper and lower body belt moldings. Both the Flying Cloud and the Wolverine lines are continued unaltered mechanically for 1928.

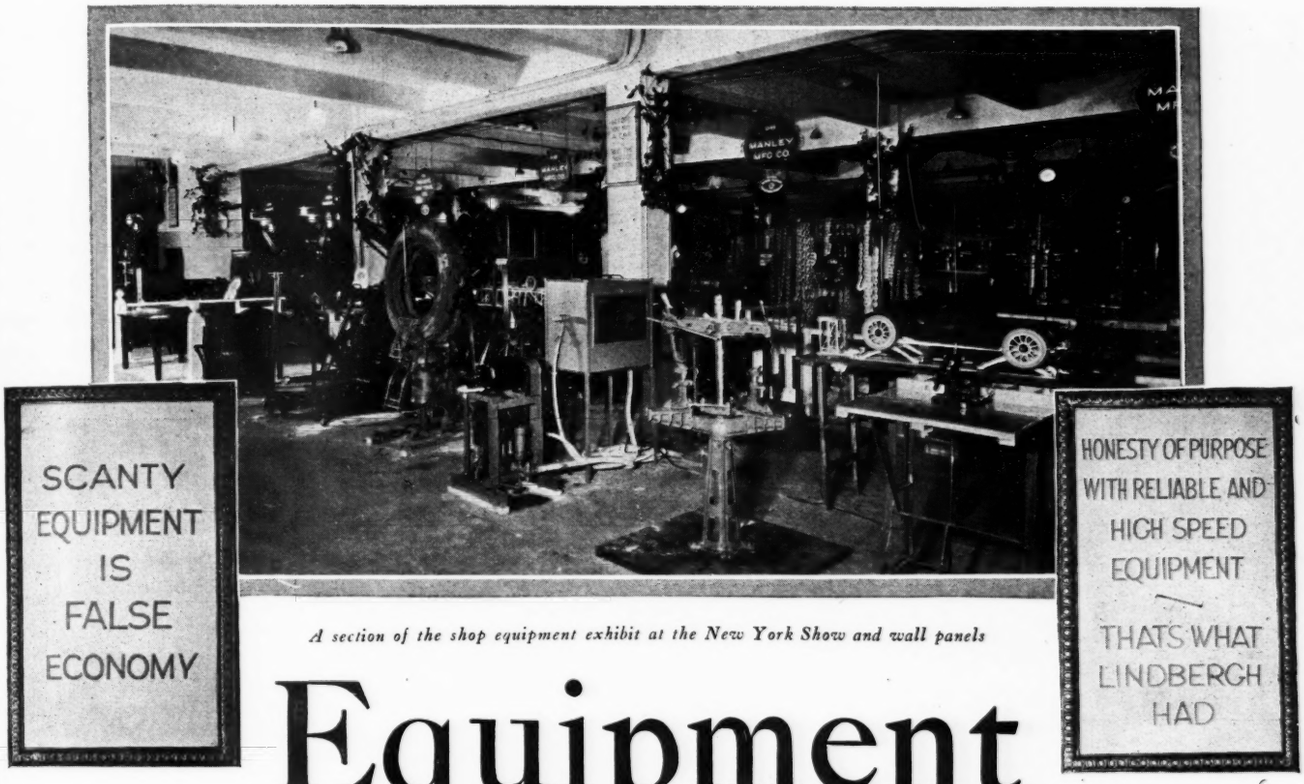
Locomobile Shows 7-Pass. Cabriolet

ON the Model 8-80 Locomobile chassis a new cabriolet body was shown. This is of seven-passenger capacity—two passengers being carried on folding seats. The trim is of solid walnut, with all exterior hardware nickel-plated. Wire wheels are used with two spares carried in fender wells.

Below is the new Locomobile cabriolet body on the 8-80 chassis. It accommodates seven passengers, two of them on folding seats



The latest addition to the Reo Flying Cloud line is shown above. It is a sporty, five-passenger touring



A section of the shop equipment exhibit at the New York Show and wall panels

Equipment Makers *Meet Shop* Needs

By Paul Dumas

THE shop equipment section of the twenty-eighth New York Automobile Show reveals a further extension of the general technical and merchandising trends that germinated in the exhibit of 1927. Like last year the shop equipment section was semi-segregated from the other exhibits, and tools instead of being displayed statically were demonstrated in actual operation. Like last year, also, the shop equipment section was housed on the fourth floor of the Grand Central Palace and for the convenience of the trade was closed to the public during the morning hours and up to 3 p. m. daily.

The offerings this year indicate that an increasing number of shop equipment manufacturers have made practical studies of the tool requirements of the present maintenance era and are building merchandise of the type and for the functions that are most readily convertible into profit for the user. This extension of a trend that was first evidenced in 1926 is manifested in the greater number of manufacturers offering tools designed to handle the 20 most frequently executed repair operations.

With a decline in number of equipment manufacturers offering heavy arbor presses and engine stands, there is seen a decided increase in the number of makes and models of power-driven, brake-adjusting equipment, car-washing and greasing equipment, hoisting and lifting equipment, and the extensive line of items used in disassembling the vehicle units. Whereas in former years most of the heavy and expensive pieces of shop equipment were designed for operations involving the overhaul and rebuilding of the vehicle, we now find that most of the present-day high-priced tools sold in volume are those built for the rendering of preventive maintenance such as washing and greasing, repainting, tire vulcanizing, and brake testing.

In the hand and small tool field is seen further evidence that tool manufacturers have gone outside their offices to find out what was needed and how it should be built. The process of loosening and tightening bolts and nuts, though insignificant in itself, is in fact a big study since the speed of execution on this portion of any repair job often spells the difference between loss and profit. Wrench manufacturers are now cognizant of this condition and have during the last year greatly enlarged their list of model numbers. Today the repair establishment really interested in doing the job quickly and well can purchase special socket and special box and end-type wrenches that will quickly loosen and quickly tighten the most inaccessibly located bolt, nut or screw.

The same cannot be said of the needed jigs and pullers, but as compared to former years the available choice is far more extensive. In this connection it is interesting to note that at least two tool manufacturers are providing and selling a complete line of special wrenches, pullers, jigs and cutting tools for the new Model A Ford car.

Aside from the consideration of the function factor of the equipment there are also definite constructional tendencies apparent in this year's exhibit. Among these could be mentioned the increasing use of anti-friction bearings in air compressors, car washers, drills and valve refacing machines. Another constructional trend

EQUIPMENT MAKERS MEET SHOP NEEDS

is seen in the wider application of power drive for all classes of equipment. A few years ago garage presses of as high as 30 tons' capacity were generally hand-operated. This year approximately 50 per cent of all presses exhibited are equipped with power drive. An exactly similar situation exists in the wrecking crane field. In the design of cutting equipment it is to be noted that three years ago only one maker was offering a power reamer drive, now there are at least six. There is also a trend toward more widespread use of the hydraulic principle for operation of various large and small tools. Hydraulic jacks of all types are now as common as the orthodox mechanical type, and an increasing number of presses, with both hand and power drives, utilize the hydraulic principle of operation. Several makers are also offering hydraulically operated car lifts.

Of the different tool items at the show are two transmission-clutch assembly portable winches which will remove much of the physical strain on the mechanic doing the fairly frequent job of clutch reconditioning. Another tool that should find ready volume sale is a universal, self-steering tow bar which does away with the second man on many road service jobs.

A new item shown for the first time is a combination valve refacer, reamer drive, and power-driven, brake-relining machine provided with individual clutches for disengagement of the various functions, and contained in a very compact ensemble. Another manufacturer of a valve-refacing machine has extended the grinding wheel arbor so as to mount a valve-stem, carbon-cleaning brush at the opposite end. Still another recent addition to the valve refacer field is one where the valve is rotated at high speed while the cutting stone remains stationary. The same maker incidentally is probably the first to apply the eccentric spindle internal grinding machine principle in a very light and compact tool designed for grinding valve seats.

Another manufacturer is showing a compact attachment for his regular line of valve spring compressors which measures the spring tension. This attachment is a dial type scale which comes into operation as the compressor raises the spring for removal of the keeper and automatically registers the tension, for any given degree of deflection, of the spring and without removing the latter.

No outstanding merchandising policies were announced during the first day of the show but one maker who has heretofore built tools for one make of car exclusively is now offering a line of universal equipment.

Show Reveals Makers Aim at New Effects in Design

(Continued from page 27)

of colors and designs for top materials than has been available heretofore.

A few cars, such as some duPont models and Reo, have no interior top lining, but the slats are finished and left bare, another result of salon influence. The only belt employed on some cars is a short, wide panel finished in colors in high contrast to the main body colors, and located on the doors just below the windows. On other cars the same effect was gained by extending the panel to the windshield at the front and to the rear pillar, breaking it off sharply at both points by a molding in a third color.

A Gardner coupe adopts a general European practice and extends the doors clear to the running board, thus eliminating the valance.

On the Hudson and one or two others the headlamps are mounted on posts. The Elcar sun visor consists of an adjustable curtain behind the windshield. Several coupes equipped with rumble seats are provided with rear windows which may be lowered to establish communication with the rumble seat occupants. A Hupmobile body, in which the hood and cowl and the body panels are finished in contrasting colors, has medallions on the front door. A very sporty phaeton equipped with tonneau cowl and windshield and a cabriolet top over the rear seat is also being shown by Hupmobile. On a Chrysler sport phaeton there are louvres in front of the rear doors to provide ventilation for the rear compartment. This same practice is being used on many cars for ventilating driver compartments by means of louvres in each side of the cowl.

A very interesting body design is the new Dodge Victory, which is of all-steel construction but quite different from that usually employed. Following Weymann body practice, the seats are mounted directly on the frame of the car and the body acts only as an inclosure. Body sills are eliminated, thus saving some 2 in. in height, and the body is suspended from the frames rather than being mounted on it. A double construction is used for the body panels and a layer of felt is attached to the inner layer which quite effectually deadens all metallic noises which sometimes become present in steel bodies. The entire side panel, from the rear quarter to the windshield, including door frames, is made a single stamping, as is also the cowl, dash and windshield frame.

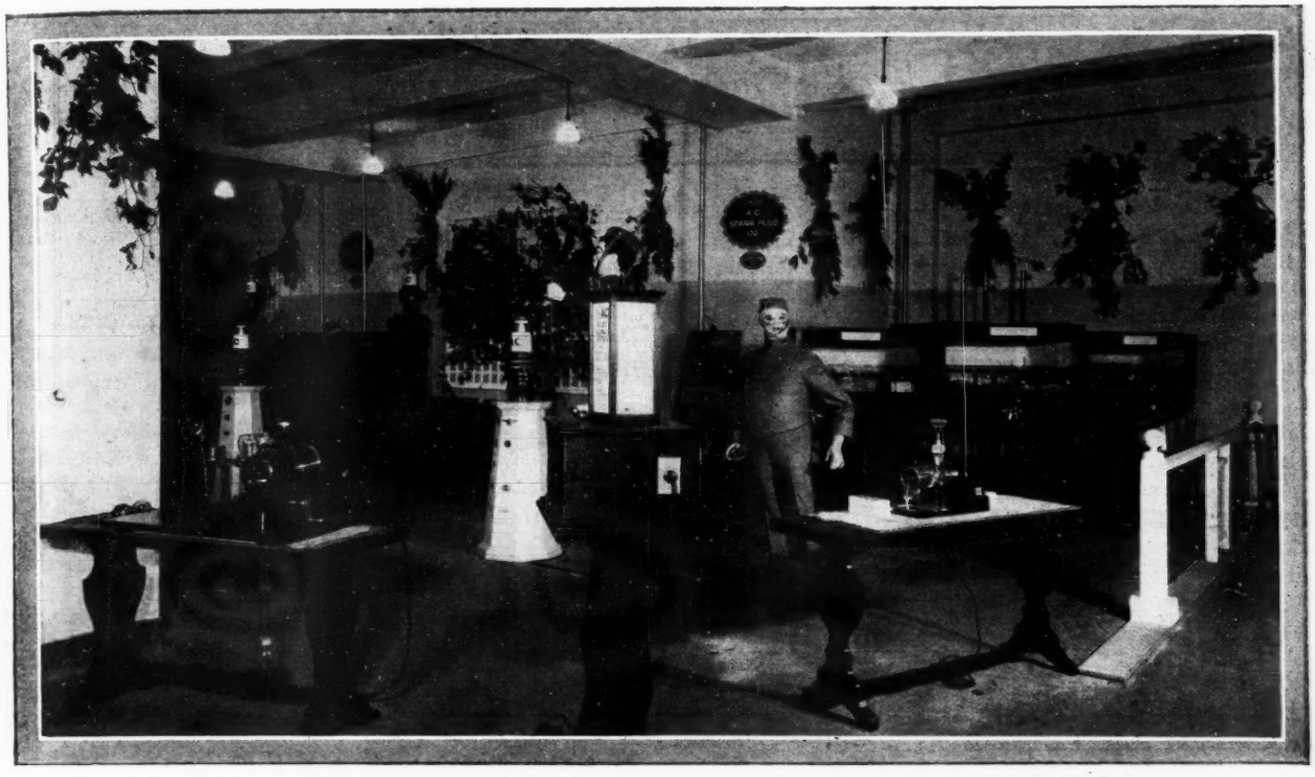
Instrument boards are generally more complete and dash heat indicators and gasoline gages are becoming common equipment. Ornamental front fenders are used on two or three cars, while quite generally the indirect lighting of instrument boards is employed.

Oakland Adopts Cross-Flow Radiator

OAKLAND All-American six models are continued practically unchanged mechanically for 1928. The only important change consists in the adoption of the cross-flow type of radiator core similar to that announced on the Pontiac Six new series in last week's issue. The radiators on the Oakland now also have a false bottom, giving the front of the car a higher and narrower appearance. In addition to this change a coincidental lock has also been adopted on the Oakland, mounted on the dash, where the coil is located behind the instrument panel.

Marmon Changes Radiator Mounting

THE manner of mounting the radiator on the Marmon 78 differs from conventional practice. The front cross-member of the frame carries two supporting brackets projecting forward. These are approximately 10 in. apart. The radiator is bolted directly to these brackets. This manner of mounting is used to protect the radiator from strain resulting from frame weave.



A booth in the accessories section of the twenty-eighth New York national show

Accessories *Pace* Public's Taste *for the* Decorative

By Sherman Swift

THE trend in new accessories, if one may judge by those seen at the New York Show, is decorative as well as utilitarian.

As evidence of this there is a new license plate holder which endeavors to hide the ugliness of the license plate and at the same time hold it firmly in place; there are a few spare tire locks that are excellently designed in addition to being sturdily constructed, and several unusually good-looking driving and spot light models. In this connection, at least one manufacturer is showing a surcingle effect that runs from one running board, at the junction of the cowl and hood, clear up over the top and down on to the other running board. This band, of heavy metal, nickeled and polished, carries two driving lights and two tire carriers that are cast integral with the unit. Provision is also made for equipping any car on which this may be mounted with wells for the reception of the spare tires.

A new idea in windshields is another novel and useful offering. This number is for the closed car only, and is so made as to permit the driver to have both front windows open without being exposed to annoying drafts. These wings turn with the door.

Smoking and vanity sets, few in number last year, are perhaps even fewer this year. An interesting combination of smoking and vanity set is offered by one maker. This number is finished in brown mahogany and the manufacturer tells us that the color is used because it has been found to harmonize well with the interiors of all closed cars, regardless of their color. The vanity case, with its excellent appointments, not the least of which is a French plate, leather-covered mirror, will appeal to every woman. It is not improbable that some may like the smoking set; however, if they do not care for it the vanity case may be purchased separately, or vice versa.

Radiator ornaments are getting better looking, considering them generally. There are probably a few of the gargoyleish type still with us, but those seen at the show are noteworthy by reason of excellence of design and craftsmanship. In these exhibits are several of early Egyptian and Gothic motifs, especially designed for the wide-mouthed radiator openings of some new cars.

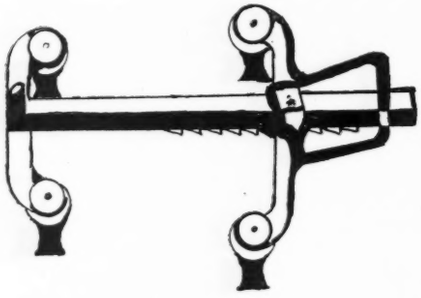
The season's crop of bumpers is worth going miles to see. Without exception, all of those exhibited at the show are remarkable for their sheer beauty of design and coloring. While retaining the safety characteristics that one associates with this necessity, they have, in practically every case, been redesigned to harmonize with the 1928 automobile. It is obvious that bumper manufacturers have been as keenly alive

(Turn to page 42, please)

The Latest in Equipment for

Tire Spreader

THE Master tire spreader consists of four rollers with two mounted on the T-head of a ratchet bar, and two mounted on an adjustable cross-piece. By means of the ratchet these rollers can be placed at any distance from each

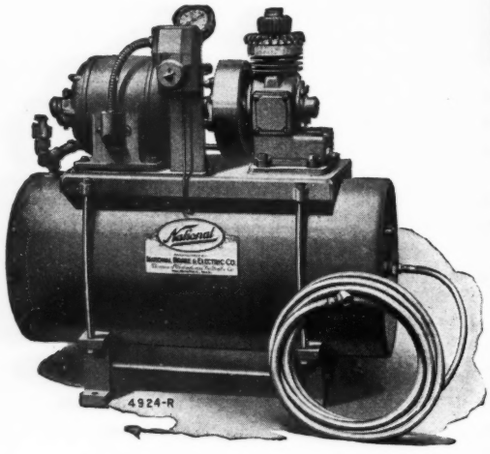


other and and will hold the tire open for inspection or while repairs are being made. This spreader can be readily rolled to any part of the tire. The price is $3. Made by the Master Manufacturing Co., 44 Clay St., Newark, N. J.

Air Compressors

SLEEVE valve principles of operation said to result in greater compactness, quieter running, higher efficiency and reduce wear, are among the features of the National Air Compressors. The line is most complete.

Probably the most popular type is the National SVE-2 which is a single-



cylinder, air-cooled, automatic motor type of compressor equipment, having a 16 by 36 in. air tank and hose.

When equipped with a 110-220 volt motor for operation on 60 Cycle A.C., this complete outfit sells for $280. Made by National Brake & Electric Co., Milwaukee, Wis.

Valve Remover

VALVES on nearly every type of motor may be quickly removed by means of the Ideal valve remover. The

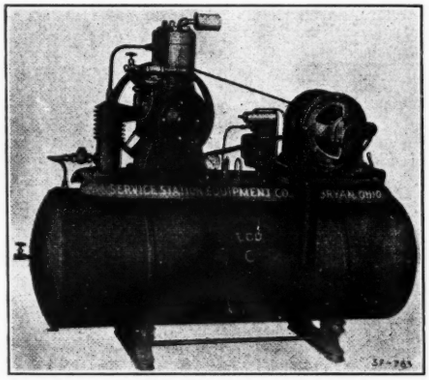
ratchet holds it in whatever position it is left, affording quick adjustment. It is made of pressed steel, case hardened and is nickel plated.

Made by Ideal Clamp Manufacturing Co., 200 Bradford St., Brooklyn, N. Y.

Air Compressors

ECO Air Compressor, SF 763, is a water cooled unit designed to handle car lifts, paint spray guns, valve grinders, and cleaning and greasing equipment.

It has a 3 hp. motor, 75 gal. tank,



automatic pressure control, displacement of 13¾ cu. ft. per minute, automatic water control on city water.

Other heavy duty equipments are available with displacements of 7.6 cu. ft. and 10 cu. ft. per minute.

Made by Service Station Equipment Co., Bryan, Ohio.

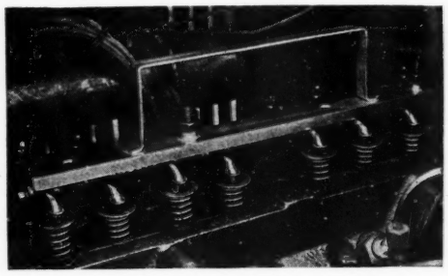
Car Washer

THERE are only three moving parts in the entire Eagan car washer, which employs a type of pump commonly used on fire engines. The equipment includes automatic vent valve, pressure gage, three-way cock, seven ft. suction hose and strainer, flexible coupling, standard make motor, automatic switch, adjustment for regulating pressure, discharge hose, and a hand control gun. List price varies from $285 to $389, according to the type of motor.

Made by Walter H. Eagan & Co., 1612 Vine St., Philadelphia, Pa.

Cylinder Head Lifter

APCO-MOSSBERG engineers have turned out this handy tool to use in removing Chevrolet cylinder heads. It is so designed that the rocker arms



are held in proper position and cannot fall down.

Made by Apco-Mossberg Corp., Attleboro, Mass.

Piston Line Reamer No. 1428

REAMRITE piston line reamer is designed to line ream pistons pin bushing holes. The shanks are designed to be held in power-driven reaming machines or used by hand. Each reamer has an adjustment of 1/16 in. in the cutting size of the blades. The pilot and guide supplied

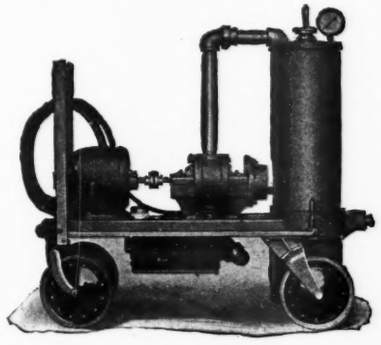
are correct for the nominal size. Extra guides and pilots of any intermediate size can be furnished. The blade is short and the guide comes right up to the end of the blade fully guiding the reamer in all bushings. The pilots and guides are of the same length and are interchangeable so that a guide for one size can be used as a pilot for an oversize. Retail price varies from $11 for the Ford size to $22 for the 1½ in. size.

Made by Greenfield Tap & Die Corp., Greenfield, Mass.

the Automotive Service Shop

Auto Vac

THE Connersville Auto-Vac is a vacuum cleaner for use in renovating car interiors. The portable unit consists of vacuum pump, electric motor, separating tank and dust buckets, all arranged in one cast iron bed. The ball bearing swivel casters, with broad flat rubber tires, low center of weights, and the bar handles, all combine to make it easily moved from place to place. The stationary Auto-Vac differs from the portable unit by having legs in place of wheels and by having no handle or electric cord. It is installed anywhere without concrete foundation, as it is shipped completely assembled. It is permanently connected to the electric line, and a pipe is run to wherever



the hose is to be attached at point of cleaning.

The United Vacuum Appliance Corp. of Connersville, Ind., is the manufacturer.

Heavy Duty Riveter

GREAT care was used in working out the leverage of the Raybestos heavy-duty riveter so as to get the maximum amount of force at the driver with a minimum pressure on the treadle. The riveter is pedestal mounted and all working parts are of generous proportions. The driver has a stroke of 2½ in., and the throat clearance will accommodate bands or shoes 7 in. wide.

The tool equipment consists of 1 driver, 2 solid roll sets, 1 star set, 1 chuck type rivet punch and 1 solid rivet punch, the last two for removing old rivets. Rivets may be set either from the bottom or top of the band by reversing the position of the roll set and driver. List price, $65. Made by the Raybestos Co., Bridgeport, Conn.

Chain Valve Remover

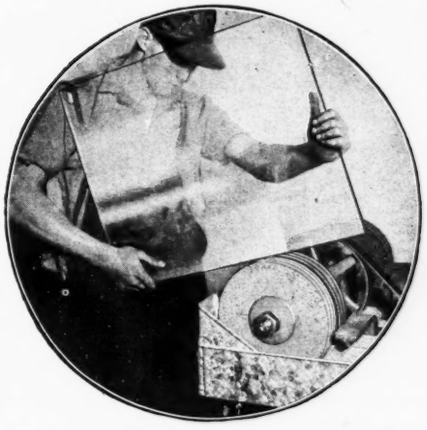
A RELIABLE chain tool for removing valves that has proved entirely satisfactory. It is used with ease

around pipes and fittings. The chain allows this, as every link is an adjustment. It is made of malleable iron and fitted nickel.

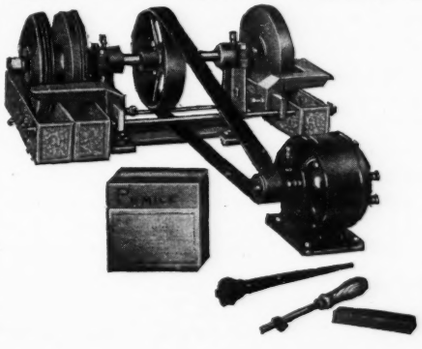
Made by Ideal Clamp Mfg. Co., Inc., 200 Bradford St., Brooklyn, N. Y.

Bench Edger

THE Henry G. Lange Machine Works, 166 North May St., Chicago, announces the Lange "Economy"

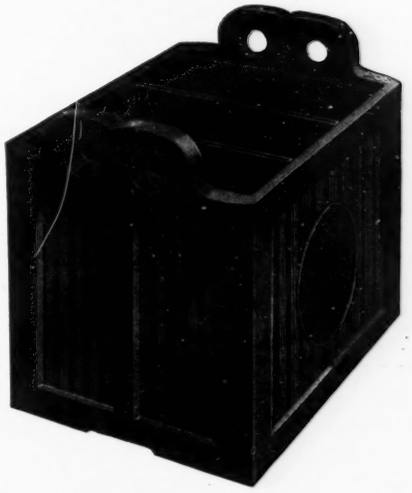


bench edger, a small, compact and low priced high quality glass edger. Can be installed in the shop for $55 plus freight if a line shaft is available, or for $70 for edger equipped with electric motor drive. This machine will grind, smooth and polish the edges of auto glass for sedan bodies, or handle any glass repair work. Furnished complete with all instructions for entering business.



Battery Containers

THE Vitalic storage battery container is made of hard rubber, which is acid-resisting and has such dielectric properties as to insure a maximum amount of service. One of the special features is the patented pitch groove, which ties the sealing compound between each cell and be-



tween the cells and walls of the container, preventing any possibility of the sealing compound opening up. Each and every container is tested with 20,000 volts. List price $1.95 to $4.30, according to size.

Made by Continental Rubber Works, Erie, Pa.

Roller Bearings

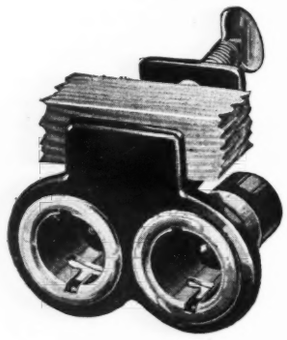
A NEW one-piece cone is the feature of Orange roller bearings in which the rollers do not come in contact with the outer edge of the pocket or guide formed in the retainer cage. In Orange taper roller bearings all the advantages of both the tapered roller and the ball bearings are incorporated. These bearings are interchangeable as a whole or in part with all standard makes.

Made by Orange Roller Bearing Co., Orange, N. J.

The Newest in Accessories

Twin-Clamp-On Socket

EASIEST accessible source of current for spot light, cigar lighters, fans, trouble lights, etc. One socket has an off-and-on switch while the other socket serves for direct connections. The Twin-Clamp-On socket can



be fastened anywhere on the dash board and the electrical connections are quickly made. The bracket is finished in black enamel and the sockets are nickel plated.

Made by Joseph Pollak Tool and Stamping Co., 81 Freeport St., Dorchester, Mass.

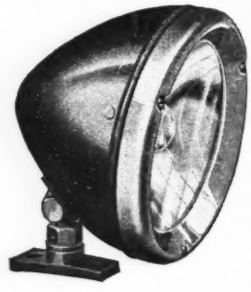
Tire Repair Outfit

THIS outfit consists of the well known Weed tire repair tool permanently mounted on a substantial bench provided with bins for the convenient storing of links and cross chains. The height overall is 3 ft. 10 in., the shipping weight is 127 lb. and the price is $30.

Made by American Chain Co., Bridgeport, Conn.

Road Lamps

THE No. 75 road lamp is well designed and beautifully finished in black enamel and polished nickel. It can be quickly and easily installed. It is equipped with a Victor Brown universal reflector which throws a powerful, wide beam to the side of the road and immediately in front of the car. It may also be had with a plain parabolic reflector.



Different mountings are supplied so the road lamp may be easily installed on tie-rods, bumper, fender supports, spring, horn or any horizontal surface.

Made by The Cincinnati Victor Co., 712 Reading Road, Cincinnati, Ohio.

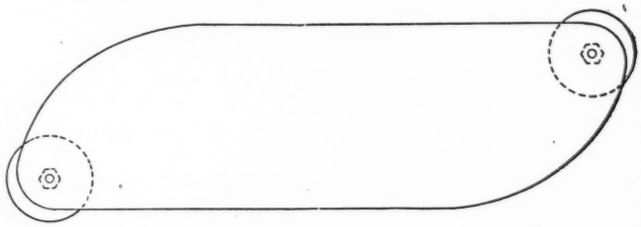
Spring Controller

THIS scientifically designed shock absorber controls the action of the spring within the spring itself. The device releases on the downward action

of the spring and absorbs the shock in a positive manner. List price, Ford size, $7.50; other cars, $13.50. Manufactured by Auto Spring Control Co., Inc., Crafton Station, Pittsburgh, Pa.

No-Glare Glass

CLEAR vision with no glare is provided when driving at night by means of the Hubbard No-Glare glass. It is designed to cover line of travel of approaching headlights and not obstruct the view. It is made of amber colored optical glass and is attached



to the windshield by means of rubber vacuum cups. It is placed at an angle so that it parallels the left side of the road.

Made by Hubbard Products Co., Kokomo, Ind. Selling help—Display cards and circulars and display stands.

Top and Tire Dressing

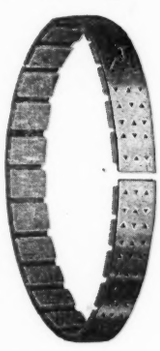
ALL kinds of tops, whether leather, mohair, pantasote or rubber, seat cushions, etc., can be restored by means of "999" top and tire dressing. This preparation waterproofs by penetrating and filling the pores of the fabric, keeping air and water out. When applied to tires it adds beauty and durability and is said to prevent cracking and deterioration of the side walls. List price, ½ pint, 60 cents; pints, $1; quarts, $1.75, and gallons, $6. Made by Damon Manufacturing Co., 325 W. Ohio St., Chicago, Ill.

Battery Hold-Down

BENFORD'S universal battery hold-down holds all batteries firmly in place. According to the manufacturer's statement the one size fits all makes and models of cars. It is designed to minimize danger of cracked covers, loosened groups and insulation troubles due to inefficient hold-downs. Manufactured by Hy-Power Corp., Mt. Vernon, N. Y.

Transmission Lining

SECTIONAL transmission lining for replacement only. The oil, carried between the sections of lining, keeps the drum and lining segments thoroughly lubricated. Oil also is readily absorbed by the wick-like ends of each segment.

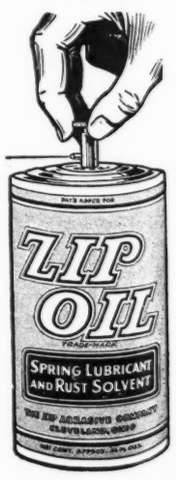


This capacity for oil absorption prevents glazed surfaces and results in a velvet-like action. List price for Fords previous to 1926, $4; for 1926 and 1927 model Fords, $4.25. Raybestos Co., Bridgeport, Conn., is the maker of this lining.

Service Station Oil Drum

THE automatic service station drum holds 10 gal. of Zip oil and is furnished complete with metering device and gun.

Designed for use by service stations in dispensing Zip oil for spring lubrication or for thinning transmission and differential lubricant. Manufactured by Zip Abrasive Co., 6010 Euclid Ave., Cleveland, Ohio.



Offered the Automotive Trade

Truck Mirror

A SNUG fitting rubber rim protects the glass of this truck mirror, keeping out the weather and securing it to the heavy backing plate without rattle. It also allows for the expansion and contraction of the glass caused by temperature changes and thus avoids breakage.

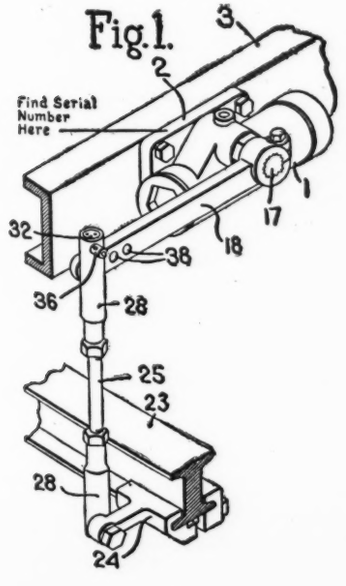
The mirror is mounted on a rigid, slotted arm 18 in. long by means of the adjustable universal bracket. Retail price, $1.80.

HiLaB Products Co., Indianapolis, Ind., is the maker of this item.

New Flentje Shock Absorber

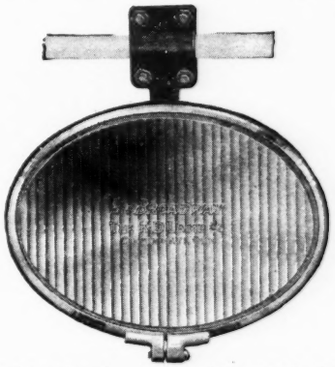
ERNST FLENTJE, one of the pioneers of the shock absorber industry, has recently made a number of improvements in his hydraulic shock absorber, and the latest model, just announced, is known as the Improved Double-Acting Hercules. The hydraulic cylinder is fastened to the outside of the frame channel for both front and rear mounting, while the link extending from the shock absorber arm to the axle is connected to the latter by a steel bracket. Spring play over a short range to both sides of the normal position is not checked in any way. Compression of the spring through a wider range is "softly cushioned," in the words of the manufacturer. At the beginning of the rebound, the reaction is taken by the frame in a lengthwise direction, thereby preventing any sharp snap or whip. During the rest of the rebound motion a soft cushioning action is produced. It is claimed for the double acting principle that it tends to prevent loss of traction. The travel of the hydraulic piston is 6 in. for front, and 8 in. for rear absorbers. The new model is said to be much lighter than the older type.

The manufacturer of these shock absorbers is Ernst Flentje, 1643 Cambridge St., Cambridge, Mass.



Driving Light

THE "Broadway" oval driving lamp is equipped with special oval reflector manufactured under S & N Lamp Co.'s patents. This special reflector throws a wide penetrating beam



of light, showing both sides of the highway, dangerous curves and gives a wonderful driving light far ahead of the car. Made by K-D Lamp Co., Cincinnati.

Chromium Plated Bumper

THESE bumpers have been redesigned to give greater beauty of appearance and proper protection as well. Chromium finish does not tarnish, is always bright and maintains its high lustre indefinitely. It is only necessary to wash the dirt off these bumpers in order to restore their attractive appearance.

List price, $15 in the 1¾-in. size for Ford, Chevrolet, Overland and Dodge. $20 in the 1¾-in. size for larger cars, and $22 in the 2-in. sizes. Made by New Era Spring & Specialty Co., Grand Rapids, Mich.

Rim Tool

THE Master rim tool is adjustable to all sizes and types of rims and can be quickly applied or removed. A 10-lb. pressure on the handle exerts a 300-lb. pressure on the rim, thus con-

tracting or expanding rims with utmost ease. This is a product of the Master Manufacturing Co., 44 Clay St., Newark, N. J., and sells for $3.

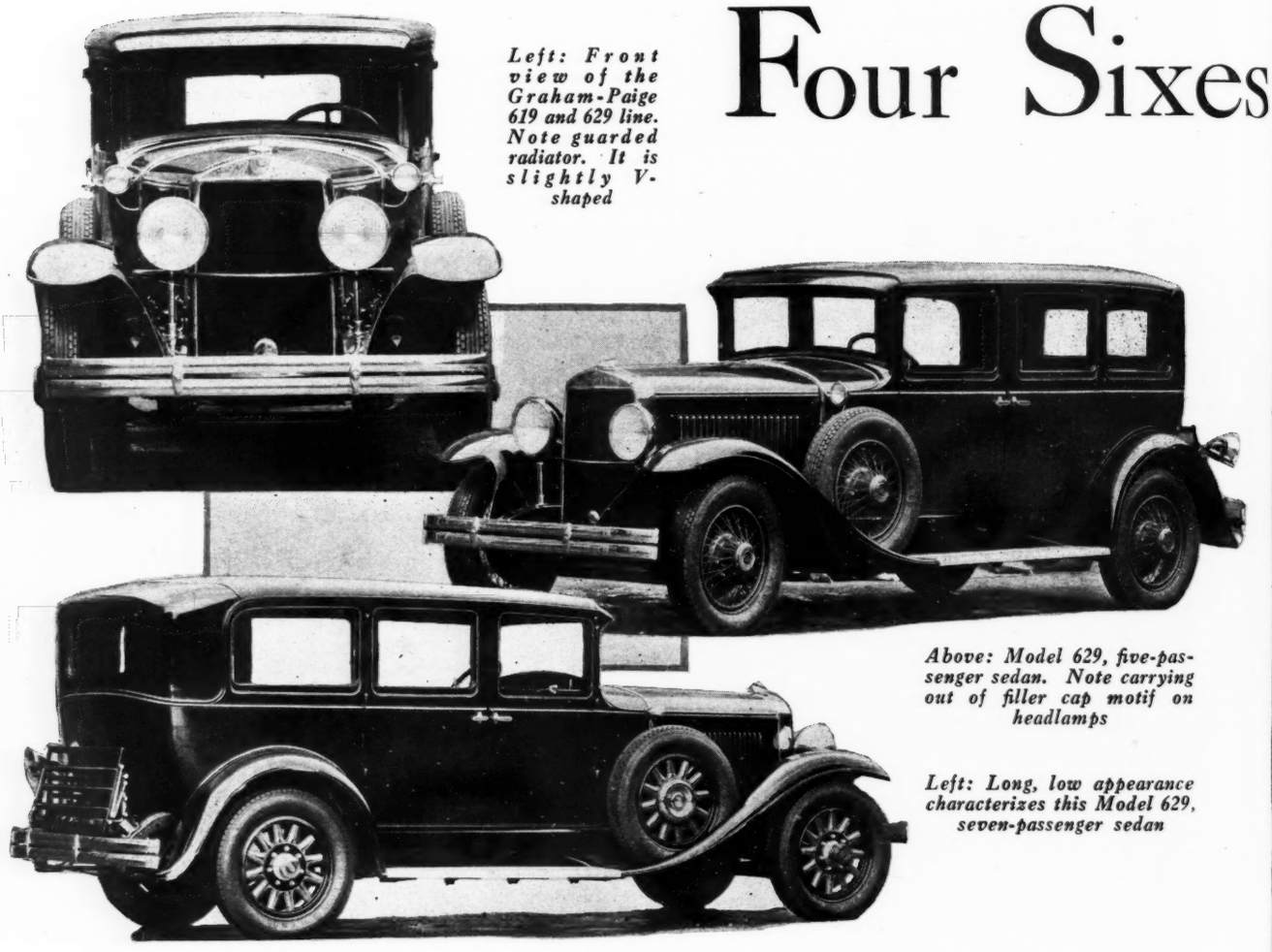
Hexdees

THE item which the Detroit Steel Products Co., 2250 E. Grand Blvd., Detroit, Mich., is featuring at the A.E.A. show, is Hexdees. This spring control was brought out about a year ago, but this is the first time that it has been on exhibit at the show. As will be seen, Hexdees clamp to the springs and, by means of a frictional roller, set up a varying resistance between the spring leaves, which effectually checks rebound.

Searchlight

THIS searchlight is an all-brass, nickel-plated light for mounting on the running board of open or closed cars. Wires are concealed in the post. The lamp is shipped complete with all fittings ready for installation and is equipped with approved dimmer lens or plain glass. Made by K-D Lamp Co., Cincinnati.

Graham-Paige Redesigns Four Sixes



Left: Front view of the Graham-Paige 619 and 629 line. Note guarded radiator. It is slightly V-shaped

Above: Model 629, five-passenger sedan. Note carrying out of filler cap motif on headlamps

Left: Long, low appearance characterizes this Model 629, seven-passenger sedan

FIVE chassis models are the offering of the Graham-Paige Motors Corp. for 1928. The introduction of the new line, which has been completely revised and redesigned, marks the completion of the reorganization of production, merchandising and financing methods instituted by the three Graham Brothers subsequent to their purchase of the Paige-Detroit Motor Car Co. Coincident with the change in the name of the company, the new line will be marketed under the name of Graham-Paige. Of the five chassis models, four are sixes and the fifth a straight eight. Prices will not be announced until the latter part of New York show week.

Complete modernization of design features the new lines. Body lines conform to the latest accepted standards of beauty, with low roof lines, high belt, high radiator and hood, long, sweeping, full-crown fenders, and elimination of sharp corners. Equipment is unusually complete, with such features as shock absorbers, front and rear bumpers, dash gasoline gage and engine thermometer standard on all models.

In mechanical design such items as seven-bearing crankshaft in the sixes, four-speed transmission in all but the smallest model, torsional vibration damping clutch in the three larger models, and hydraulic four-wheel brakes and AC fuel pump on all cars in the Graham-Paige line present ready sales features.

The smallest chassis, the 610, has a wheelbase of 110½ in. The next, which incidentally is not yet in production, has a wheelbase of 114 in. and is called the 614. Models 619 and 629 are also sixes with wheelbases of 119 and 129 in., respectively, while the 135-in. eight is called the 835.

All of the sixes have new L-head engines, designed by Graham-Paige, with the 619 and 629 models using identical chassis with the exception of frames and tires. Piston displacements range from 175 cu. in. for the 610 to 299 cu. in for the straight eight, with the 619 and 629 models' engine having a displacement of 288 cu. in.

In the latter (619 and 629) engine bore and stroke are 3½ by 5 in., and although its rated horsepower is only 29.4, it actually develops 97 hp. at 3200 r.p.m.

The seven-bearing crankshaft is 2¾ in. in diameter, with a total bearing length of 12½ in. Of this total 7¼ in. alone is devoted to front, center and rear main bearings, the points at which the greatest bearing load occurs. The front bearing has a length of 2 5/16 in.; the center, 2¼ in.; the rear 2 11/16 in., and the other four are all 1 5/16 in. in length. Main bearings are of the interchangeable bronze-backed, babbitt lined type, while the crankshaft is of drop-forged steel, weighing 75 lbs.

Line *Which Now Consists of* *and a* Straight Eight

All Models Equipped With Watson Stabilators and Hydraulic Four-Wheel Brakes. Four-Transmission Standard on All But Smallest Car

By A. F. Denham

Crankpin journals, which are 2⅜ in. in diameter, are drilled out to lighten the shaft without reduction in strength. Steel connecting rods and Nelson-type, aluminum alloy, invar-strut pistons are used.

Connecting rods have a center to center length of 10½ in. compared to the 5 in. stroke, with spun-in, babbitted lower bearings 1½ in. in length. Piston pins are also hollow and 1 in. in diameter. Pistons are fitted with three rings, the upper two being of the compression type and ⅛ in. wide, while the lower is a 3/16 in. oil control type of ring.

The upper crankcase half is integral with the blocks. The heads have high turbulence and a compression ratio of 5.15 to one, being high enough to obtain good fuel economy, power and torque, while just low enough to enable the use of standard fuels without danger of detonation.

The radiator monogram on the new Graham-Paige line is distinctive and individual. It is made of bronze

No. 1 silchrome steel is used as a safety precaution for the 1⅝ in. clear diameter exhaust valves, this material being particularly resistant to the corrosive action which is characteristic of some of the doped fuels now on the market. Exhaust valves have 45 deg. seats as against 30 deg. seats for the 1 11/16 in. inlet valves. Stem diameter for both is .340 in., equal to the valve lift. Mushroom-type tappets ride on the four-bearing camshaft. The latter has a replaceable bronze-backed, babbitt-lined bushing type of bearing at the front, where maximum wear normally occurs. Diameters of these bearings decrease from 1.998 in. at the front to 1.902 in. at the rear. The front bearing has a length of 2¼ in., with 1 3/16 in. length for the rear bearings journal, and 1 in. for the two center, the last three riding in the cast-iron crankcase proper.

Camshaft drive is by a Link-Belt silent chain provided with automatic idler tension adjustment, the chain also serving to drive the water pump and generator shaft at the lower left side of the engine. Width of this chain is 1½ in., with 110 links of ⅜ in. pitch giving it a total length of 41¼ in.

Distributor and oil pump drive is by a vertical shaft, geared to the camshaft at the center, the oil pump being located in the sump. Pressure feed is used to main, crankpin and camshaft bearings, in addition to which the timing chain idler, valve lifters and external water pump are also lubricated under pressure. An oil filter is standard equipment. The oil filter is located at the front end with a breather at the rear of the crankcase, where draft from the fan cannot suck oil out of the crankcase.

Mounted at the lower left side of the engine, the centrifugal water pump acts as a pressure rather than a suction pump. An extension of the pump-shaft drives the generator through a tubular rubber coupling. In the cooling system is found a rather novel feature relating to radiator design. The latter is of Long manufacture and has a false front, which not only protects the main fins and tubes from being damaged by stones, but also serves as an effective disguise of the internal radiator design, enabling the use of a relatively shallow shell and a fairly deep header tank at the top. By giving the shell and the guard a slight V-shape at the front, a further touch of individuality is obtained in the cars.

In combination with the cooling system is a thermostat located in the water outlet riser in the cylinder head. The large four-bladed fan is driven by a flat 1½ in. belt, 36⅛ in. long. A dash water thermometer is also included in the standard equipment. Total water capacity is 25½ qt. of which 9 qt. represents the volume in the radiator, indicating the large size of water passages used in the engine.

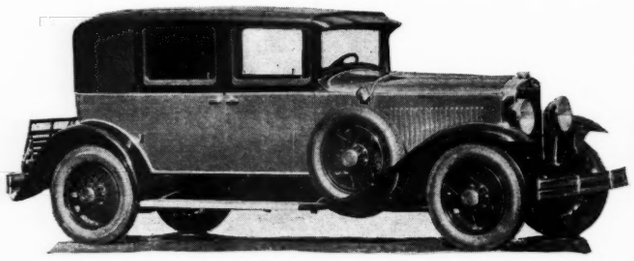
Engine suspension is of the four-point, rubber cushioned type. A Lanchester vibration damper is mounted on the front of the crankshaft. Electrical units are all of Northeast manufacture, with semi-automatic advance for the distributor and Bendix type starter engagement.

A 17-plate Willard 114-amp. hr. storage battery is used. Spark plug terminals are covered with soft rubber caps and wiring is inclosed in a nickeled conduit.

Of interest also is the single iron casting used for the exhaust and intake manifold. The latter is given a vitreous enamel finish, and inlet riser heating is ob-

GRAHAM-PAIGE REDESIGNS LINE

tained by a cored passage in the casting. Exhaust is carried down at the front of the engine to keep fumes out of the bodies. A Johnson 1¾-in. vertical outlet carburetor has been adopted, on the air intake of which is mounted an air cleaner. Fuel is supplied by an AC fuel pump as previously mentioned. Capacity of the gasoline tank at the rear is 18½ gal. A dash gasoline gage is included in the standard equipment.



This Model 629 town car looks distinctly custom built

Incorporated in the double-plate Long clutch is the torsional vibration damping mounting and coil spring drive. It is effective in preventing the amplification of transmission noises both in accelerating and in slowing down, through synchronization with crankshaft torsional vibration periods. Facings have an outside diameter of 8⅜ in., an inside diameter of 5¾ in., and are 9/64 in. thick.

Mounted in unit with the engine is the four-speed Graham-Paige-Warner Gear transmission. This is the first time that a low or medium-priced car has been offered with this type of transmission. It is featured by the use of internal-external gears, making shifting an easy matter even at speeds of 50 to 65 m.p.h. Direct drive is on fourth with reduction ratio for third speed of 1.42 to one. The latter is designed chiefly for accelerating and in climbing hills. The second speed, which has a reduction of 2.41 to one, can be used generally in place of the usual low speed in starting on level roads, as well as for climbing unusually steep hills; the first speed, which has a reduction of 3.28 to one, similar to the reverse, being needed only in starting up on uphill grades, in heavy sand or in getting out of mud holes. Standard shift is used with first-speed engagement, effected by latching out the lever to the left and back.

Through the provision of this transmission it has been possible to materially lower the rear axle reduction, enabling a corresponding reduction in engine revolutions per mile in high gear. Metal universal joints and tubular propeller shaft provide the drive to the rear axle. The latter has a malleable iron housing for silence. It is of the semi-floating type with the pinion shaft straddle-mounted on ball bearings. Double Timken taper roller bearings are used at the rear wheel ends. Thrust washers are fitted on the outside of differential side gears. Reduction on the 619 axle is 3.646 to one.

Front axles are of I-beam section with roller thrust bearings in the steering spindles. Front wheel hubs are carried on double Timken taper roller bearings. Brakes on these two models (619 and 629) are internal expanding Lockheed hydraulics on all four wheels, an automatic refilling mechanism surrounding the master cylinder. Drums are 15 in. in diameter and take 26½ in. of 1¾ in. width, 3/16 in. thickness lining per wheel. A supplementary emergency brake, mechanically operated and acting on the propeller shaft, is supplied.

Steering gears use the straight ratio, 16-to-one Ross cam and lever mechanism. Steering column brackets are made adjustable to suit the individual driver. Semi-elliptic springs all around are used on both these as well as the other Graham-Paige chassis models. On the 619 and 629, front springs are 38 in. long and 2 in. wide, while rear springs are 2¼ in. wide and have a length of 58 in. In conjunction with the springs Watson Stabilators both front and rear are included in the standard equipment.

Frames are of conventional pressed steel channel section with two tubular members, one between the front spring horn and one back of the flywheel housing, curved under the transmission. In addition there are three, channel-type, gusseted, steel members, the front supporting radiator and front engine supports, and the rear member being in the form of a wide pan also serving as gasoline tank cover.

Included in the standard equipment of both models, in addition to those items already mentioned, are automatic windshield wiper, bumpers front and rear, rear view mirror, combination tail, stop and back-up light, foot rest, robe rail, toggle grips, arm rests, silk draw shades, and electric clock, engine thermometer and fuel gage on the instrument panel in addition to the usual instruments. Double instrument panel lighting is used, either indirect or direct being available by turning a toggle switch to left or right. With the direct lighting in use, floor boards and coincidental steering gear locks are also illuminated. Light control is mounted on the steering wheel, actuating the double filament bulbs in the nickeled, bullet-shaped, 10-in. lens headlamps, cowl lights also being nickeled and mounted on nickeled cowl bands. In addition to the treadle-type foot accelerator, there is a throttle control on the steering wheel, while choke and spark control buttons are placed above the instrument panel. Windshields are crank-operated and of the lifting ventilating type. Seats are form-fitting. Closed models have built-in sun visors.

In addition, the 629 body models are fitted with cigar lighter, vanity case, smoking set and folding trunk rack.

In general the description of the 619 and 629 models holds good for the other two six-cylinder chassis, with modifications in accordance with the lower prices of these models, as well as their smaller size. Final details of the 114-in. wheelbase chassis have not been announced as yet, but the engine will have a bore and stroke of 3⅛ by 4½ in. corresponding to a piston displacement of 207 cu. in., a rating of 23.44 hp., and an actual power peak of 71 hp. at 3200 r.p.m.

The lowest priced model in the line will be the 610. This has an engine quite similar in general design to the larger units, with a bore and stroke of 2⅞ in. by 4½ in., developing 52 hp. at 3100 r.p.m.

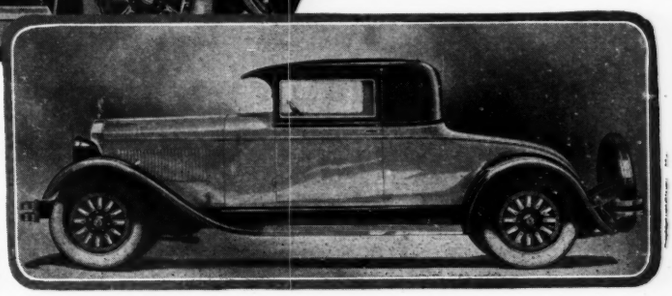
On the straight eight, aside from the engine, changes mechanically are relatively more minor in character. A feature new in the engine is the AC fuel pump. Some of the new features evolved by the Graham-Paige Motors Corp. such as the guarded radiator core are also found on this chassis, while the clutch incorporates the Long torsional vibration damping mechanism and the four-speed transmission is continued. Electrical units on this model are now also of Northeast manufacture. Steering gears are straight ratio cam and lever types.

Larger Engine Used in Velie 6-66

Improvements Made in Chassis and Bodies of 6-66 and 6-77

At left is the Velie 8-88 special sedan which is priced at $2,095

Below is the Velie 6-66 coupe with rumble seat which lists at $1,265



A LARGER engine in the 6-66 line, together with a number of improvements in chassis and bodies in both the 6-66 and the 6-77 feature the latest developments of the Velie Motors Corp. The 6-60 supersedes the Standard 50, and the 6-77 the Special 60. The engine in the new 6-66 has a bore of 3 3/16 in., 1/16 in. larger than before, and it develops 56 b.hp. at 2800 r.p.m. A vibration damper is fitted.

The cylinder head has been redesigned for greater turbulence, and a new Stromberg 1-in. vertical carburetor is employed, in connection with the new manifold to improve the starting and acceleration.

All main bearings, connecting rod bearings, piston pins, cam bearings, gear train, push rods, valve lifters and rocker arm shaft are lubricated under full force feed.

A new, flexible-disk, single-plate clutch insures full plate contact through the use of flexible, staggered, steel sections between the clutch disk linings, and fabric mounting of the plate to the clutch hub.

The Velie "super service" front and rear axles have been redesigned. The front axle is now the reverse Elliott type with an extra heavy "I" section and equipped throughout with Timken bearings. Steering spindles are equipped with Timken roller bearings and the tie rod and steering arms are oversize offset type. The rear axle is semi-floating with oversize helical bevel gears. Rear wheels are mounted on dual Timken bearings.

New automatic compensating internal hydraulic brakes are used on all four wheels. The brake drums are 14 in. in diameter by 1¾ in. wide.

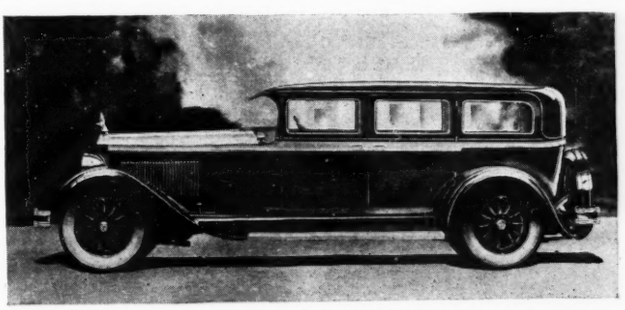
Artillery type wood wheels with large spokes and hubs are standard equipment on the new 6-66 with painted or varnished finish optional. Tires are 30 x 5.25. The fenders of the 6-66 are one-piece design with a wider crown to afford better protection to the body and to carry out the general design of the body and hood. A rear gasoline tank cross-member apron gives the car a distinctly finished appearance.

The new Jamestown radiator has a heavier core, greater cooling area, a new and wider shell and is fitted with a new radiator emblem and new radiator cap

Both appearance and comfort have been emphasized in the choice of interior fittings and equipment. New form-fitting cushions and backs are designed to relieve the strain of long hours of driving. The instrument panel of oxidized silver has been redesigned to include five units, a gasoline gage having been added. All models now are equipped with parking lamps, arm rests and treadle type accelerator pedals. Interior finish is in dark walnut and further improvement is effected by the use of garnish rail panels on all doors. All bodies are finished in high-lustre lacquer with choice of several color options.

Equipment on all Model 6-66 cars includes spare

(Turn to page 42, please)



The Velie 6-77 special sedan shown above has a list price of $1,585

Aerotype Line of

By M. Warren Baker

The four-door sedan of the Moon Aerotype line, listing at $2,195

Right: Head-on view of the Moon Aerotype 8-80 four-door sedan for 1928

As a companion line to the new 6-72 recently announced, the Moon Motor Car Co. has brought out a new line of eights, in two models, a sedan and a close-coupled sedan, each listing at $2,195, making use of the new Continental 15-S lual manifold engine.

The bodies of the Aerotype 8-80, which were designed by a noted French engineer, are of the newest composite steel and wood construction and are designed with safety and comfort as cardinal requisites. They typify the new Franco-Spanish school of automobile body design, coachwork and interior decoration.

The two models are upholstered in imported tan broadcloth and have deep, luxurious form-fitting seat cushions and backs, arm rests and rich tapestry assist loops. Other fitments include a broadcloth-covered robe rail integral with silver-finished assist grip, silk curtains at rear and quarter windows, commodious uniquely designed door pockets, and smoking sets finished in a taupe goatskin.

Hardware is of a special period design in a soft gray silver finish. Door and window moldings are in genuine American walnut. The instrument board, which is gracefully curved to conform to the higher than usual cowl, is finished in a two-tone walnut effect and is ivory-striped, the lower edge being bound in a brushed-finish German silver molding. The instrument panel, under which all instruments are grouped, is of engine-turned, non-glare German silver and is indirectly lighted. Choke and ignition buttons with walnut centers are conveniently located under the instrument panel.

Interior operating equipment includes a 19-in., thin grip, ribbed steering wheel of composition hard rubber with a black satin finish spider; a Johnson-type positive transmission lock operated in gear shift lever; swinging-type windshield; two flush-type cowl ventilators atop the cowl; automatic windshield wiper; rear vision mirror; rubber-cushioned brake and clutch pedals; a full-length accelerator foot pedal; Ross cam and lever steering gear and Lockheed hydraulic four-wheel brakes.

The Franco-Spanish mode of design is further seen in the unusually deep, narrow, cellular-type radiator which is surmounted by a German silver radiator shell of special Moon design. In designing this new radiator shell, Moon engineers chose German silver.

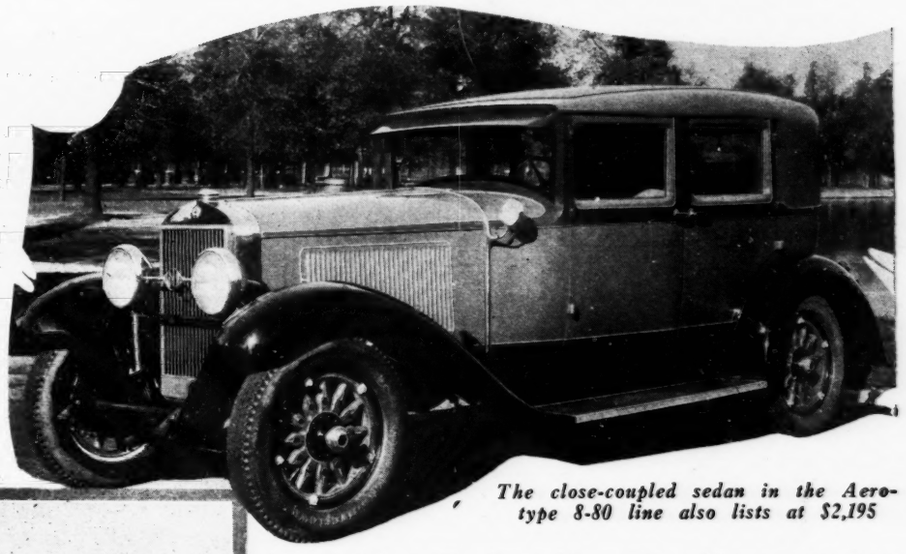
The radiator is fitted with new type of manually-operated vertical shutters which are lacquered to harmonize with the body color. A new nameplate and an artistic filler cap to conform to the long, deep, slender hood and the graceful flare of the car's airplane fenders, lend a decidedly European touch to the car and set it off to advantage.

A distinctly new adaptation of the lance-head, offset panel is applied to the cowl of the Aerotype Eight, further carrying out the airplane motif.

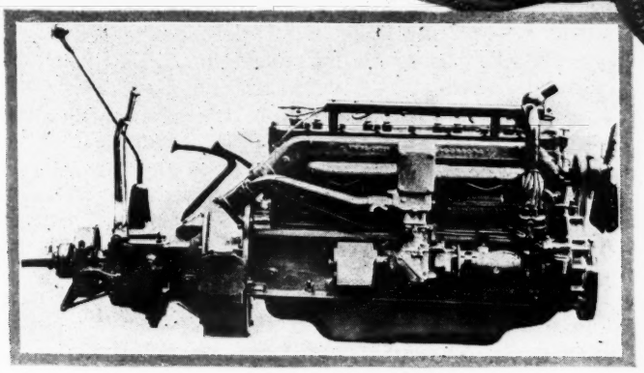
Low-hung construction, with the resulting low-hung appearance, is an outstanding feature in this new car, which measures 70 in. in height, yet has a road clearance of 9 in. despite its low-hung construction. Rectangular, Pullman-style windows, deep window reveals, snappy military sun visor, a gracefully curving roof, sweeping, wing-like airplane fenders of large

8-80 *is* New Moon Eights

Four-Door and Close-Coupled Sedans at $2,195 Make Up Series. Dual Manifold Engine Used



The close-coupled sedan in the Aerotype 8-80 line also lists at $2,195



Right side of the Moon 8-80 engine

size, lower running boards, and a wide molding, which runs along lower edge of the body and hood to the radiator, further emphasize the low-hung appearance of the new Moon Aerotype 8-80.

The body construction of the Aerotype sedans is in keeping with the newest ideas of abundant leg and head room. Special attention has been given to the springs in the seat backs and cushions, which are of form-fitting design. Stress has also been laid upon the chassis springs, which are semi-elliptic of special silico-manganese steel, the front springs being 36 in. long and 2 in. wide, while the rear springs are 54 in. in length and 2½ in. wide.

Upper body moldings and hood moldings, which are integral with the lance-head panel on the cowl, are wider than usual and run entirely around the body. Door handles are of a massive design in a two-tone silver finish. Highly polished aluminum glass channels add an entirely new note to the upper structure of the car and one that enhances its beauty and at the same time insures quiet operation of door and window glass.

The new cars have a wheelbase of 125 in. Aside from the distinctive features of the engine, several features of the chassis are worthy of attention. Following the rugged construction employed in the 6-72, the "battleship" type of frame, braced by eight cross-members, is an outstanding feature of the new eight. The tread has been increased from the standard 56 in. to 58 in., allowing wider seats and more comfort for passengers.

Front brakes are Lockheed hydraulic external, contracting on all four wheels. Brake drums are 14 in. in diameter and 1¾ in. wide. The parking brake also is external, contracting on the transmission drum which has a diameter of 8 in. and a width of 2 in.

Both front and rear axles are Columbias, the rear axle being of the semi-floating type. Spiral-bevel gears are used with a ratio of 4.63 to 1. There are two bearings on each driveshaft and the differential is the four-pinion type. Both drive and torque are taken through the rear springs, while the drive from the transmission shaft is taken through two universal joints and the oil-tight propeller shaft.

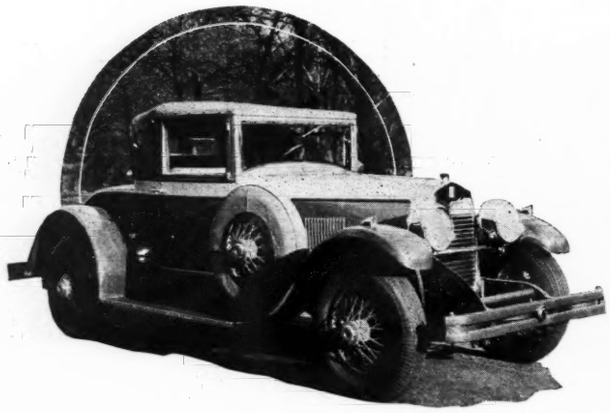
A Borg & Berg single-plate, 10-in. clutch, with a rubber-insulated driven member, is employed, the engine, clutch and Warner transmission being mounted in a unit and supported on the frame at four points. Transmission gear ratios are: low, 3.114 to 1; second, 1.69 to 1; high, 1 to 1, and reverse, 3.78 to 1. Annular ball bearings are used on the main shaft, and the pilot shaft is mounted on Hyatt roller bearings.

Both starter and generator are Delco-Remy, the starter having a stepped-down drive, engaged by Bendix pinion. The generator is driven by chain and is regulated by a third brush. A U.S.L. battery is used. The ignition switch of the push-pull type is mounted on the center of the steering wheel. The ignition system is of the semi-automatic type.

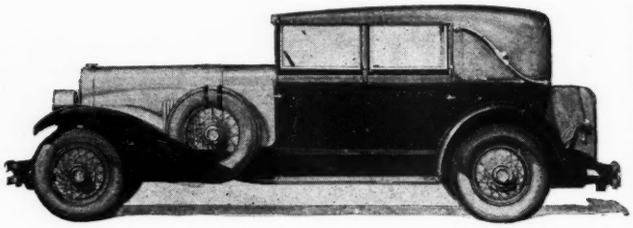
A Ross cam and lever steering system with a ratio of 15 to 1 is used. The steering wheel is 18 in. in diameter of composition hard rubber and has a thin, ribbed grip. The spider is of burnished and engraved aluminum.

Either wood, wire or disk wheels are supplied as standard, with full balloon tires, 31 x 6.20 in size.

Equipment furnished includes a transmission lock, operated in the top of the gearshaft lever, electric gasoline gage, engine heat indicator, speedometer, automatic windshield wiper, rear view mirror, rear traffic signal, air cleaner, oil purifier and thermostatic water control.



At left is the new duPont convertible coupe, and below the convertible sedan



duPont Uses Four-Speed Transmission

SEVERAL interesting features are found on the new duPont models exhibited at the New York show. On the new 136-in. wheelbase chassis a four-speed Warner-Gear Hyflex transmission is used in combination with mechanical units otherwise identical with those of the E series.

This transmission has previously been described in this publication and its chief characteristic is an internal gear arrangement for shifting from third to fourth and back. This type of gearing is featured by the considerable reduction in transmission noise while driving in geared speeds, while facilitating shifting even at maximum road speeds between third and fourth speeds. The shifting arrangement in the duPont edition of this transmission is forward to the left for low, back for second, back and to the right for third and forward to the right for fourth. Reverse is engaged by latching out and to the left of the regular shift positions.

On the bodies of this chassis several interesting new features are found. There is a very simple and effective driver's seat adjustment. By lifting the seat cushion a large threaded screw with a wing nut is disclosed by which the entire seat frame including both cushion and back can be adjusted forward and back.

There are two individual windshields on the models as well as two cowl ventilators and individual windshield wipers for each windshield. The instrument panel lighting is by an indirect-direct method, the panel being recessed at an angle, and the light being concealed behind the aluminum instrument board casting at the top with a reflector to throw the light on the instruments. In the rear quarters of the cars there is a folding floor board at the front which can be raised in two positions to be used for a foot rest if desired. A secondary floor board is below to prevent entrance of mud into the rear quarters.

An individual trunk design and mounting is used. The trunk is designed to fit the body and is mounted directly on the rear frame horns without the use of a rack. This trunk was used on both the touring and convertible sedan models exhibited.

Accessories Pace Public's Taste for the Decorative

(Continued from page 31)

to the trend in design as the car makers have been.

Color finishes of these new bumpers apparently run the entire gamut of easily recognized shades and tints. There are big, thick-chested bumpers finished in light canary; long, low, sweeping bumpers, with heavy "pigtails" of black and nickel (the "pigtail" is the ornamental end of the bumper) finished in green with horizontal stripes to impart width; and one bumper that for a reason not apparent to this writer, starts straight across, changes its mind about six inches from the start and sweeps in a deep curve.

Another bumper has a driving light in either end, the lenses and reflectors of which are guaranteed by the maker to stand up under any and all conditions of service.

An exhibit that apparently attracted its full measure of attention featured an accessory, comparatively new, in the form of a trunk to which were attached bumperettes and a spare tire carrier. In appearance the trunk is of the conventional type, when opened, however, it serves as a pick-up or delivery body.

No one could go through the accessory exhibits without having it borne in on him that dealers this year will have something to sell in the line of accessories and that purchasers will receive more for their dollar than ever before in the history of the industry; a strong statement, perhaps, but one that is conservative enough in the light of existing facts.

Larger Engine Used in Velie 6-66

(Continued from page 39)

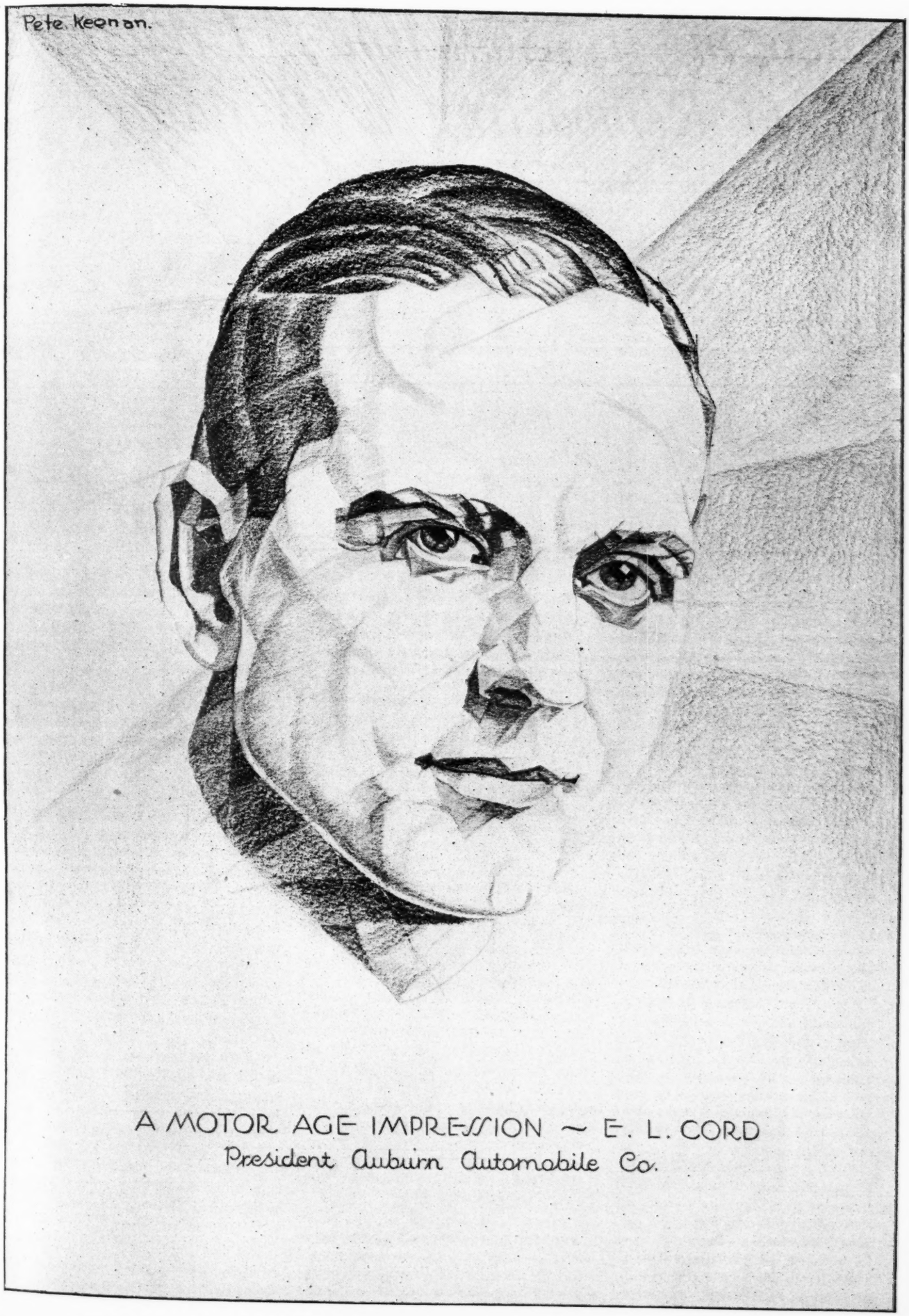
tire, tube and cover, Lovejoy hydraulic shock absorbers, combination stop and tail light, chromium plate bumpers, rear vision mirror, automatic windshield wiper and parking lights.

The new Series 6-66 includes the following models: Metropolitan four-door sedan at $1,265, Metropolitan two-door sedan at $1,195, and the Metropolitan coupe with rumble seat at $1,265.

Among the improvements on the Special and Royal sedans, which comprise the Series 6-77, is the nickel-plated surcingle over the cowl, of which the chromium-plated parking lights and brackets are integral parts.

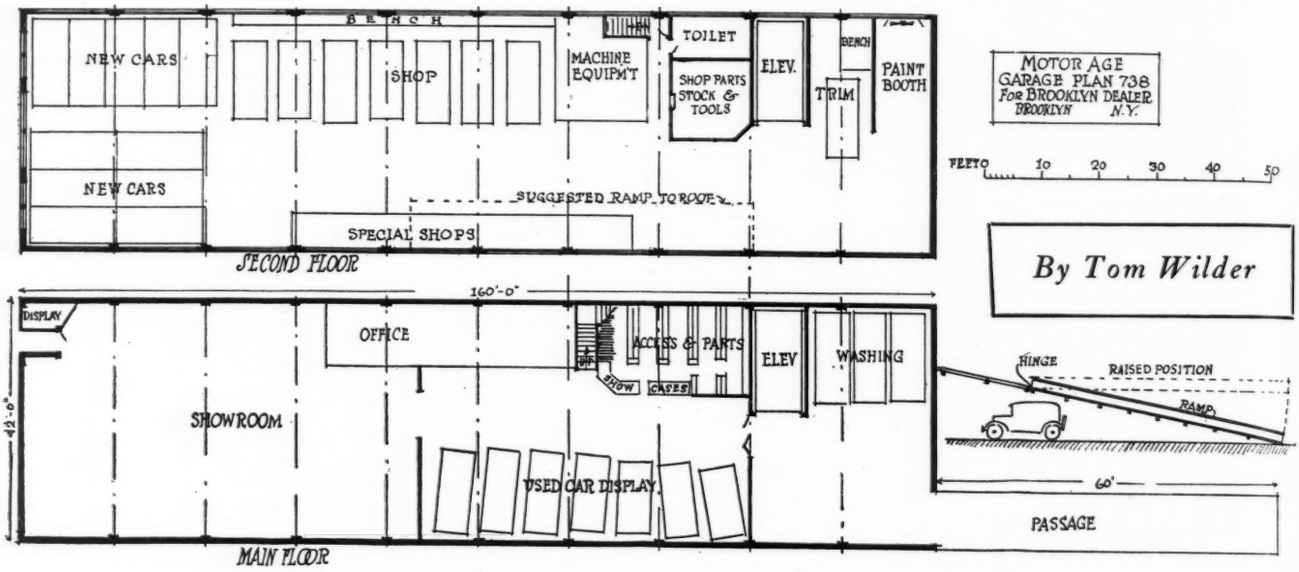
As in the 6-66, new and heavier artillery type wheels with larger hubs and new hub caps are provided for the 6-77. Interiors conform closely to those in the 6-66 with a new five-unit instrument panel and walnut finish. Acorn design, chromium plate headlights are used.

Internal, automatic, compensating four-wheel brakes also are standard on the 6-77 and Lovejoy hydraulic shock absorbers are factory equipment, front and rear.



A MOTOR AGE IMPRESSION ~ E. L. CORD
President Auburn Automobile Co.

Moving is Sometimes Preferable to Remodeling a Building



WE are contemplating making alterations and additions to our present sales and service building of which we are enclosing a rough diagram. At present we are handling about 400 new and used cars per year and expect to increase our business in 1928.

We have a one-story building, 42 x 160, with an open alley in the rear running 60 ft. into another street. Our showroom is 30 by 35, accommodating 4 cars. We have no office. A front car entrance to the building is 9 ft. wide. The rest of the building is used for service and new and used car storage.

We would like to make the following improvements and would like to have you give us your idea as to what the plans should be:

Close front entrance to garage and build showroom across entire front of building and bring it back an additional 35 ft., giving us 2800 sq. ft. of show space. The rest of the ground floor to be used for used car display, new car storage, parts department and customers' waiting room.

To build an additional floor for service and repairs, including small Duco paint shop, small machine shop, and additional storage space. Would like to have a concrete roof to be used for parking purposes. The alley in the rear would have to be covered as it would be used as the entrance to parts department and all cars would have to enter and leave building through it. An elevator will be used and we also need a staircase.—Brooklyn Dealer.

If you had asked us the advisability of doing the things you propose, we would certainly have said, "don't do it!" You will be going to a great expense to rebuild an old building which, in the first place was not fitted for automotive sales and service and which will be doubly or trebly unfitted when a second floor and storage roof are added.

The worst feature of this building is the car entrance. The long single drive would be bound to cause confusion in serving the first floor shop, but with the shop increased to more than double its present capacity and storage space increased to at least four or five times its present size and all using the narrow passage, the confusion would increase in proportion. Add to this the fact that every car must wait for the elevator before it can get in or out and you will have at times three or four cars bunched to take the elevator up and another coming down to go out with the passage filled with incoming cars—not a condition to please your customers greatly.

Another disadvantage of this building when remodeled is that the lower floor will be in total darkness except for the front windows and unless the second floor rises above the adjoining buildings it will be about the same because of the nature of the roof, although skylights may be introduced in some of the car spaces without interfering with storage.

Our advice is to get a larger and especially a wider building instead of trying to improve this one when it has so many things against it. A building 20 ft. wider would be twice as efficient as this and one 10 ft. wider would be probably 80 per cent more efficient than this. If this location is especially valuable and cannot be replaced by one of better proportion we are suggesting that a special ramp be built in the 60 ft. passage which is just about long enough to reach the second floor at a fairly good grade. This ramp is built like a 45 ft. bridge of steel hinged at its upper end and resting on the ground at its lower end. The lower end is arranged to be raised, which can be done by the proper application of elevator machinery.

As the greater part of the traffic will be to the second floor and roof, the ramp will be raised only when cars are to be taken in or out of the showroom. This arrangement has another argument in its favor; the elimination of the elevator and operating space around it permits the addition of this space to the used car showroom making it more than 50 per cent larger.

The floor and roof supports should be steel girders to relieve the floors of the added inconvenience of posts.

Legal Queries on Automotive Topics

Answers by Wellington Gustin

Disposing of Abandoned Automobile

I have a Lincoln roadster, 1921, left for repairs last November, to have new block installed. Then the owner decided not to put in new block until I heard from him. I took old block off and other work he authorized me to do which amounted to approximately $35. This together with the storage totals about $100.

I have never heard from the owner and do not know his name or whereabouts. I have an idea this car was used to haul liquor; it has a State of Maine license. Present selling value of said car is about $100. Could you tell me through mail how I could sell this car and get my money out of it or gain possession of car to use as a wrecker?—E. B. Merrill, Gorham, N. H.

YOU should foreclose your lien to secure transfer of the car legally, and at the same time retaining all your priorities in the car. This is a court action, and should be handled by an attorney.

If the car were used to haul liquor it might be subject to seizure by the government, but this possibility does not preclude you from asserting your rights in the car, and once you have sold same or secured its title by court order, the government would not challenge your right.

But since the car has been abandoned it may be that the car is a stolen one, and as such the thief had no authority to order repairs and thus impose a lien upon the car. And the true owner of stolen property may recover same wherever it may be found, for attempted transfers are illegal as the thief may not pass title. Hence, from this angle you need the guidance of an attorney in making a sale of the car in question.

Selling a Car to Satisfy a Lien

I have in my garage a 1920 model Ford coupe which was in a wreck, and the repair and labor charges amount to $24. The owner of the coupe did not have sufficient funds to settle the bill, so he left the car.

How long may I have same in my possession before disposing of it? What is the legal but least expensive way of notifying owner and taking action against him?—Egly's Garage, Forrest, Ill.

ILLINOIS gives a lien by statute, whereby you may sell the car to collect your charges. But this lien act requires the repairman to file a lien notice with the recorder of deeds. A form of notice is set out in Section 41, Chapter 82 of the Illinois Statutes.

This lien may be closed at any time.

Details of the proceedings are set out in Section 45, Chapter 82, *ibid*, you must secure a certified copy of this lien notice as recorded and delivered to the sheriff with instructions. These are too detailed to reprint here, and usually require an attorney, as the proceedings are technical and may result in a court action.

Costs of the sale are paid for from proceeds first.

If there are no liens against the car so that superiority of your own lien does not aid you, you may bring a simple action in justice court and get judgment for the amount due. Then you may levy on the car in your own hands and sell. The judgment being a general one you may proceed to levy on any other property of debtor until your claim and costs are paid in full.

The Legality of Price-Cutting

I would like to ask a question for a friend who wishes to become an automobile mechanic and dealer. He wishes to start in a small way by selling accessories in his spare time and later on build a service station. Will you please tell me does he need a dealer's license to do business in spare time? Also is it against the law to undersell all other dealers and agents? Also is he entitled to receive dealer's catalogs and buy at regular wholesale prices? Is it absolutely necessary to have a service station in order to become a legitimate dealer?

The underselling I have mentioned will be only for a short while in order to gain business.—Anthony F. Krupinski, Webster, Mass.

THE law licensing dealers does not make any distinction between spare-time and full-time selling.

There is no law against cutting of prices. In fact the owner of property may sell his goods at whatever price obtainable. So, he may give his goods away. In fact, the anti-trust laws make it unlawful for men to contract to hold up prices when such results in restraint of trade.

Practically, one may undersell all others only to the point where such prices result in losses to himself. And it is not absolutely necessary to have a service station in order to become a legitimate dealer, but experiences teach that the service station aids the dealer's business. While one may start in business in some other manner, all dealers must have a place to do business, and the better that place of business, other factors being equal, the better and bigger his business will become. The fact that the service station exists is proof of its fitting into the economic scheme of the motor industry.

A Conditional Sales Contract Case

In 1926 we sold a car on conditional sales contract to a party living in South Dakota. Very soon after purchaser had obtained possession of the car it was confiscated by the government for reason of being used for transporting liquor.

The car was held by the government until this fall when same was placed on sale and sold to the highest bidder, who in this case was the original purchaser. One of the local banks furnished the money to purchaser to buy the car. As their security they took a mortgage on the car. Now, what we want to know is: Is our original security good? The bank states that it is not.—Reeder Motor Sales, Reeder, N. D.

THE courts have held that, where a car has been used in transporting liquor, the government's title by confiscation is inferior to the rights of a prior lienor. And that where dealer sells a car, retaining title pending payment of the purchase money, or where the dealer takes a mortgage upon a car, his lien is superior to the government's lien of confiscation. Except and unless the dealer, holding such lien, sold the car for the purpose of transporting liquor, or had guilty knowledge of the purposes for which the car was to be used.

But where the government seizes a car for transporting liquor it is the duty of the lienor to assert his lien in the court action by which the government seized the car.

There might be some circumstance preventing your asserting your legal rights in the car against which you may secure relief. Sometimes lack of notice of an action in court is sufficient for relief being granted an injured party.

But if you have remained idle with knowledge of this confiscation without intervening in the suit to secure your rights, you may have slept upon your rights and become guilty of leaches, and thus have lost your rights.

So, unless you can avoid this court action the sale is valid and the mortgage of the bank is good against the car.

On the facts you have stated, the bank holds a valid mortage, and your rights have been lost by failure to act in time. But a fuller statement of your case might disclose facts to show otherwise. The matter warrants your seeing a local attorney.

Of course you have a claim against the original purchaser.

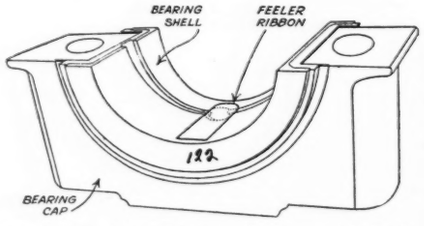
READERS' CLEARING HOUSE

Questions Answered By C. Edward Packer

Stars That Leak Oil

I would like to get some information on a Star Six. I have had some trouble with leaking oil out of the back main bearing. I have also had high oil consumption and have tried offsetting this by the use of special oil rings with pretty good results. Please give me all the information you can on the fitting of bearings as I am sure that I am losing oil from the rear main.—Moline, Ill., Reader.

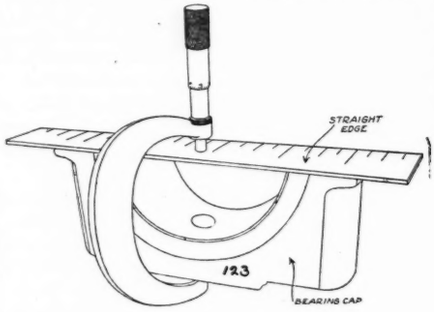
REMOVE both bearing caps and also the lower bearing shell. Place a ½-in. wide, .003-in. thick feeler ribbon the length of the bearing between the



lower bearing shell and the crankshaft pin, parallel with the center line or lengthwise, as shown in the illustration. Then replace the bearing shell and cap with the feeler ribbon in place, tighten the nut and try the tension of the bearing by rotating the shaft. Continue this operation, adding additional thicknesses of feeler ribbon between the bearing and the crankshaft pin until the bearing is snug and it is just possible to turn the shaft.

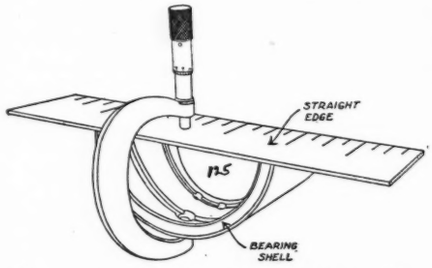
When the proper tension of the bearing on the shaft has been obtained, and with the bearing still in place, give the crankshaft one complete turn to determine if the crankshaft pin is out of round. If the pin is out of round, the shaft will turn freely at one point and bind at another. If the crankshaft is out of the car it can be checked with micrometers. Crankshaft bearings or pins which are out of round will cause the bearings to loosen quickly. Therefore, before installing new bearing shells or tightening old ones, the checking of the crankshaft pins for trueness is in order. Of course, if the shaft is out of round it should be turned or reground and new caps fitted. If the crankshaft pin is true, deduct .002 in. from the thickness of the feeler ribbon between the bearing and the crankshaft pin which will represent the amount the bearing must be taken up. For example, if it takes a .006-in. feeler ribbon to make the bearing snug enough so the crankshaft can just be turned, the bearing must be taken up .004 in.

If more than one bearing is loose, each bearing must be checked separately so that the tension of each bearing on the shaft can be properly tested



and the crankshaft pin checked for trueness. When the proper tension has been secured, make a record of the amount which that particular bearing must be taken up, remove the feeler ribbon, replace cap and bearing as they were before checking for bearing clearance and proceed to the next loose bearing and check for the amount of looseness and crankshaft pin trueness in the same manner. After having determined the amount each individual bearing must be tightened proceed as follows:

First, remove the bearing cap and

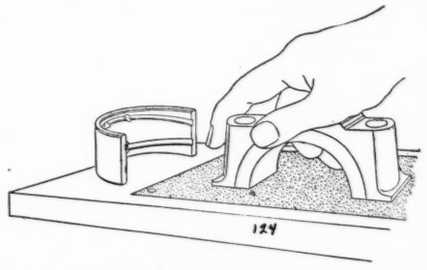


also remove the bearing shell from the cap.

Second, place a straight edge so as to span the two flanges of the bearing cap and with a micrometer, one edge resting on the straight edge and the other on the bottom of the bearing cap, make a record of the measurement. In the same way check the bearing shell. Be careful in doing this not to put so much tension on the micrometer that the straight edge is bent.

Third, place the bearing cap face down on a piece of No. 00 emery cloth which has been fastened to a surface plate or any flat, smooth surface, and with a firm, even pressure, slide the bearing cap back and forth at the same time giving a slight twisting, or semi-revolving movement as illustrated.

Fourth, be sure to wipe off with a piece of clean cloth every trace of emery dust, then replace the bearing cap, deducting the second measurement from the first which will show the amount of metal that you have just removed. Continue this operation until the correct amount has been taken off, which amount has been determined as just explained. A possible variation of .001 in. minus is permissible. After having removed the necessary amount



of metal from the bearing cap the same amount of metal should be removed from the bearing shell, as illustrated. It will be observed that the edge of the bearing shell extends beyond the edge of the bearing cap exactly .002 in. This is necessary, and must not be changed. Otherwise, the proper oil seal will not be obtained and will result in early bearing failure.

It is entirely possible that someone has taken up the bearings on your car without observing this point, and this may be the cause of your loss of oil at the rear main bearing.

How to Brake a Car

Will you kindly let me know which is the correct way to brake a motor car, with the clutch in and brakes applied or with the clutch released, also the reason for same. —W. O'Connor, City Mechanician, City Corporation Garage, Hamilton, Canada.

THE manner in which brakes should be applied depends entirely on conditions. If the car is traveling at a high rate of speed and the pavement is wet, it is best to leave the clutch engaged until the brakes have slowed the car down to probably 8 or 10 miles an hour. In stopping the car in this manner the differential action assists in equalizing the braking action, and with the engine turning over and the clutch in, the possibility of skidding the rear wheels, thus causing the whole car to skid, is greatly reduced.

Of course, as the speed of the car is brought down to approximately 8 miles an hour or less, it is necessary to throw out the clutch. It is considered good practice to keep one's foot off the clutch

pedal as much as possible. Frequently just slightly applying the brakes proves to be sufficient, as changes of traffic conditions are likely to make it possible to keep going when at first one was of the opinion that it would be necessary to stop.

Every time the clutch is thrown out there is wear in the clutch thrust bearing and on the disks. Therefore, we would say that the clutch pedal should not be touched until the car has slowed to eight miles an hour and then if it develops that it is absolutely necessary to stop, throw out the clutch just as the car is brought to a stop.

Does Grinding Valves Kill Power?

Please tell us what would cause an engine of a Buick Standard Six Model 27 to apparently have less power after the valves had been ground and the carbon cleaned out and the valves carefully adjusted to .008, than when the car first came into the shop. Also the valves carefully adjusted to .008 in. seem to be more noisy than they were before the car came in. Our customer says that he does not have the speed on the hill or level that he had previously. Can the valves be adjusted closer than .008 in. without burning them?—Kann & Son, Fifth and Brown Sts., Lafayette, Ind.

IT is not unusual after grinding valves in an engine that has covered quite a bit of mileage, to find that after the valves have been ground the pistons and rings will pass quite a bit of oil. The reason for this is that the improved suction on the down stroke tends to draw up more oil than was the case when the valve seats were not so good. This is particularly noticeable on low-speed operation. Aside from that there seems no possible explanation for reduced performance as a result of grinding valves. We assume, however, that the valve seats were properly reseated and the valves themselves properly refaced, as a chattered seat on a valve grinding job would probably give worse results than the old seats which had been hammered black in service. Do not adjust the valves closer than .008 in. If all valves are adjusted absolutely alike and left at .008 in. you can probably hear them, but due to the fact that all clearances are identical there will not be one or two valves making more noise than the others and you will probably find that a uniform valve action sound is not objected to.

Fitting of Pistons With "Feelers" and "Mikes"

I am a self-made mechanic, one who just naturally picked it up around the shop, and heretofore I have fitted pistons, bushings, etc., just from the "feel." For some time now I have been reading MOTOR AGE and you say that the "guess work" methods are obsolete. Now, here is what I want to know—just exactly how do you fit a piston with micrometers and feeler gages, etc.? Where do you measure the piston? At the top, in the middle or at the bottom? And do you take the diameter of the cylinder lengthwise of the motor, or crosswise, at the top or half-way down? If I should use a feeler gage, what position should the piston be in when I push the gage between it and the cylinder wall? Also please give me the proper clearances.—J. C. Carter, Weatherford, Texas.

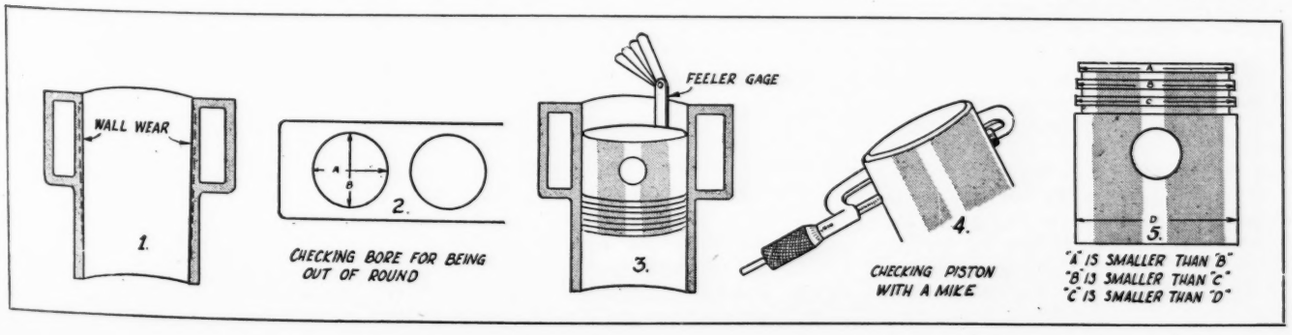
IN order to make clear this matter of fitting pistons, we are illustrating a number of the steps. Cylinder walls do not wear uniformly and are likely to become oval or tapered and furthermore may develop ring ridges at the upper end. All cylinder bores should be perfectly round within .0005 to .001 in. If they are true between .002 and .003 in., they will do, but if they are more than .004 in. out of round, they should be reconditioned. To check for an out-of-round condition you should check the bore both lengthwise of the engine and crosswise. You should also check it at the top, half way down and at the bottom. An inside micrometer can be used for this, though a much better method is to use a dial indicator. By using a dial indicator, variations will be seen immediately without the trouble of removing and resetting the instrument, as is necessary when using an inside micrometer. In checking from the top to the bottom of the cylinder, all cylinder bores should be straight within .0005 to .0015 in. If they are tapered as much as .003 in., that will serve, but if they are more than .005 in. tapered, they should be reconditioned.

Obviously the ideal condition is where the cylinder is perfectly round and straight and the pistons are perfectly round. Actually, however, these conditions never exist and, consequently, we are giving you the permissible variations.

Pistons are measured on the skirt. Due to the fact that the head of the piston is the hottest part of it, most clearance is allowed at No. 1 land, which is the part of the piston immediately above the top ring. No. 2 land, which is between No. 1 and No. 2 rings, will be a little greater in diameter than No. 1 land, and so on down the piston, the skirt or bottom of the piston being greater in diameter than any of the lands. Consequently, fit or clearance is measured at the skirt. Before attempting to fit a piston you should check it with a micrometer to be sure that it is round within the limits given. The piston should be round between .0005 and .001 in. A piston that is round between .0015 and .002 in. will serve, while a piston .004 in. out-of-round should be trued up or discarded. One way of truing up a piston is to hold it in the left hand with the high spot up. Then strike it a sharp rap with a rawhide mallet, or block of wood, and check again, repeating this operation until the piston is round within high limits of .002 to .003 in.

When fitting a piston in the bore, the piston is put in upside down as a rule. That really is immaterial so long as you can readily reach its skirt. The piston should work freely from end to end in the bore and round and round. If it binds at any place, that is an instant indication that something is not true. Clearances for cast-iron pistons are .001 in. for each inch of cylinder bore, or fraction thereof. For example, a 3-in. cast-iron piston would be fitted with a total clearance of .003 in., while a 3½-in. piston would be given .004 in. of clearance. The clearance is measured with a feeler gage and if .004 in. of clearance should be given, the piston should just be a snug fit but movable in the bore with the .004 feeler gage alongside of the skirt.

Due to special design in the latest aluminum-alloy pistons, these are generally fitted now as close as cast-iron pistons are fitted, though each manufacturer usually gives the recommended clearances with each set of pistons. Solid aluminum-alloy pistons which, by the way, are rarely met these days, are always fitted with twice the clearance that is given a cast-iron piston. This is necessary because of the greater expansion of aluminum than cast-iron.



READERS' CLEARING HOUSE

Check Your Pumps

I would like to tell my troubles with a 1923 Cleveland coach with engine No. 51111. This engine heats up and the valves stick and break the rocker arms off. The way I have sized the job up is that with the water inlet and outlet at the front of the engine there is not enough water getting to the back of the engine to keep it cool. I have checked the ignition timing and camshaft and also put in a new timing chain. The rocker arms break off No. 3 mostly.

If I road this car at 35 to 40, the water will boil and crack just as if there wasn't enough water. It will heat up as much in 2 miles as it will in 50 if you don't exceed 25 or 30 miles an hour. I can make the valves stick in 4 miles if I step on it. I have seen other Cleveland cars that gave the same trouble. I baffled the water system by taking sheet shim material and punching ¼ in. holes and laying this under the gasket over the water holes except for the back two. The valves haven't stuck since, but it heats and boils the water just the same.

Some people say that I should ream the valve guides out, but they seem loose enough. I may not have the automatic spark advance just right, as I have taken it out and tried it and put it back and I have no way of getting the right tension on the spring. This engine has good pick-up and works fine if you don't get in a hurry.—G. L. Beard, Box 76, St. Johns, Ohio.

THE whole trouble seems to be that the radiator is clogged, or that your water pump is not turning as it should. We would suggest that you inspect the whole water pump assembly and be sure that the impeller is turning and that the driving key or pin is not sheared off. It is not always easy to thoroughly flush out a radiator and if your trouble persists, even after flushing with sal soda or muriatic acid, we would suggest that you try this car with a new radiator. The only way to accurately test the automatic advance on the ignition system is to check this on a test bench that has a rotating spark gap calibrated in degrees. Any authorized Bosch service station should be able to take care of this for you.

Pops When Coasting

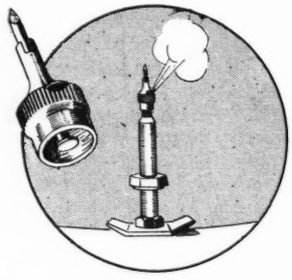
What is the common cause of an engine popping in the muffler when a car or truck has been pulling under normal conditions and the foot is suddenly removed from the accelerator so that the vehicle pushes the engine.—H. J. Lakevold, 420 W. Thirtieth St., Los Angeles, Calif.

WHEN an automobile or truck is running along so that the vehicle is actually pushing the engine and the throttle is closed, we have the pistons rising and falling but the closed throttle results in the development of a very high vacuum in the intake manifold. This suction upsets the incoming charge, resulting in too rich a mixture. This rich mixture does not burn properly as it has had insufficient oxygen or air in it. The result is that many of the charges are pumped into the muffler where they may unite with sufficient air to result in an explosive mixture. Then when other charges in the engine may be fired they set off the charges that have been pumped into the exhaust pipe and muffler and it is these explosions that you hear.

SHOP KINKS

Ideas that have proved useful

By taking an ordinary valve cap and driving a nail through it and then drilling a hole in the cap, as indicated, one can easily make a very convenient tube deflater. Of course the nail should be cut off on the inside of the cap to the right length so that it will just hold the valve core down when the cap is lightly screwed in place—Alfred Borschel, 43 Welmost Place, Buffalo, N. Y.



Readers of Motor Age *are invited to submit ideas that they have found useful in doing some particular service job in the shop in a better or quicker way. For each one published $2.00 will be paid. Whenever possible the idea should be accompanied by a sketch or diagram from which a drawing can be made.*

The Siamese Ford

I am building a Ford racing car, using two Ford engines, but as yet have not figured out a way that I can time it. As a consequence, I have to come to Motor Age for this help and I would like to have you send me instructions on handling this. I am planning on using two sets of timing gears instead of using one camshaft.—Ishmael Gribbin, 116 E. North Ave., East Palestine, Ohio.

IN view of the fact that you are using two sets of timing gears and two camshafts, you do not have a special timing problem. The thing for you to do is to assemble your two engines, which we presume you are mounting in tandem, so that their crank throws are at right angles to each other. That is, when pistons 1 and 4 in the first engine are up and pistons 2 and 3 down, the pistons in No. 2 engine are all on the same level.

Glycerine Does Not Gum

Will glycerine solution cause a gum to form in the cooling system of a car, and if so, will this gum form more in cars without water pumps than those with water pumps? And, if the gum does form, how can it be dissolved?—H. W. Salmon, Box 115, McLean, Ill.

GLYCERINE does not form a gum in the cooling system of a car, and consequently you will have nothing to worry about with regard to dissolving it. It does, however, work better in cars that are equipped with water pumps.

Ford Model T Engine Performance

We have been readers of Motor Age for a few years and have received many ideas from it. Now we wonder if you can give us some advice from this job before we go too far with it. One of our customers, who is in the ice business, asked us to rig up a Ford engine to the water pump, which he is going to use for washing the ice chips from the conveyor. There are many pumps on the market designed for this purpose, but he thinks he can save some money by using the Ford engine which he has on hand to drive one of these pumps.

The pump that he is going to use is the impeller type and requires 12 hp. at 1500 r.p.m. We wonder if the positive drive from the end of the Ford engine will do the work, or if it will be necessary to use belts and pulleys. How fast does the Ford engine revolve when the car is moving 25 miles an hour? At what speed does the engine develop its maximum power?—Universal Garage, 24 Hartford Ave., New Britain, Conn.

A FORD engine directly coupled to your pump will prove capable of running it to capacity. A Ford engine in good condition and with the throttle wide open at 1500 r.p.m., actually develops 20 hp. This is the equivalent of a car speed of 37½ miles an hour. As you are only going to require 12 hp. at 1500 r.p.m., the engine should be able to handle this load nicely, with the throttle only part way open.

The Ford engine turns 1000 r.p.m. when the car is doing 25 miles an hour with regular gear ratio. The Ford engine develops its maximum power at a speed between 1500 and 1600 r.p.m. We are, of course, referring to the Model T Ford engine. For your convenience we are showing the performance of a Ford Model T engine at different speeds with the throttle wide open, and listing with this performance the car and truck speed which would result.

R.P.M.	Speed In M.P.H. Car	Truck	Pounds Torque	Horsepower
300	7.5	4	35	2
400	10.	5.25	57	4.5
500	12.5	6.55	69	6.5
600	15.	7.9	73	8.5
700	17.5	9.2	78	10.40
800	20.	10.50	81	12.33
900	22.5	11.85	83	14.20
1000	25.	13.15	82	15.60
1100	27.5	14.50	81	16.66
1200	30.	15.80	79	18.20
1300	32.5	17.10	77	19.
1400	35.	18.45	73	19.66
1500	37.5	19.75	70	20.
1600	40.	21.05	65	20.
1700	42.5	22.40	60	19.40
1800	45.	23.75	53	18.20
1900	47.5	....	47	17.

READERS' CLEARING HOUSE

How to Tin Connecting Rods

As a subscriber to MOTOR AGE we should like you to give us the answer to the following question. What is the process for tinning connecting rods to make the babbitt adhere to them? We find in many cases that the tin has all come off and we are unable to retin them.—Orr's Machine Shop, Okmulgee, Okla.

IN order to retin the rods, it will be necessary to use a flux made from muriatic acid. It would be well to place a quart of muriatic acid in a crock and then add zinc to the acid until the acid discontinues consuming the zinc. You will then have a solution of zinc chloride which is a very good flux. This flux should be applied with a swab to the parts of the rods to be tinned. After doing this the rods should be left in the molten bearing metal until they have attained the heat of the metal. Of course, just the end of the rod being rebabbitted is left in the metal. If on removing the rod from the metal it is found that the rods are not properly tinned, you should swab the surfaces again with acid. Applying the flux when the rod is hot is more effective than applying it when the rod is cold and the second application will surely cause the metal to adhere.

Pontiac Leaking Oil

I have a Pontiac 1926 model that is leaking oil through the front cover around the crankshaft. The fan pulley throws oil all over the hood. I have had the front end cover off and bent the tin or cupped the washer over just a fraction of an inch and it seems to help some. I carry the oil level one quart lower than the gage calls for. Any information will certainly be appreciated. Should there be a felt washer between fan pulley and gear cover.—Sex Penn's Garage, 109-111 S. First Street, Brookhaven, Miss.

NO felt washer is called for behind this cover. If you will remove the cover and lay it face down on a level bench, and fill it with gasoline up to the level of the flaired portion, you will probably find that in the flairing process this part was cracked and the crack should be soldered or brazed shut.

Another possibility is that the breather screen is clogged up and causing pressure in the crankcase which is resulting in blowing oil out.

The Pierce Rolls

We have in our shop a Series 80 Pierce-Arrow on which we ground valves, cleaned the gas line strainers, faced and timed the ignition points according to the instruction book. The car at idling speed will run even and then develop a roll as though the carburetor were too rich. It will then run evenly for a short period and then repeat the rolling process. Is this condition a characteristic of this model, or is there some minor gas flow trouble?—Wm. J. Meyer, 1762 Brooklyn Ave., Brooklyn, N. Y.

WE are inclined to agree with you that there is a minor difficulty in the gas flow. Unfortunately you did not mention the kind of carburetor that you have on this car. Some of these cars are equipped with special Strombergs made especially for the Pierce and others use the Pierce carburetor. In either event we feel that your trouble is in the gasoline level and you can probably overcome this action by lowering the level a slight amount from what it is at the present time.

How Does It Do It?

I noticed specifications of the new Ford in the last issue of MOTOR AGE. Will you please explain how it is possible to get 60 to 65 m.p.h. with a gear ratio 3.7 to 1, tire size of 30 by 4.50 and 2200 r.p.m. of the engine?—W. E. Hollenbeck, Lentner, Missouri.

IT is not possible; 2200 r.p.m. of the engine is the speed at which the maximum horsepower is developed and is not the maximum r.p.m. of the engine.

What is the maximum r.p.m. of the engine in the old and new Chevrolet?

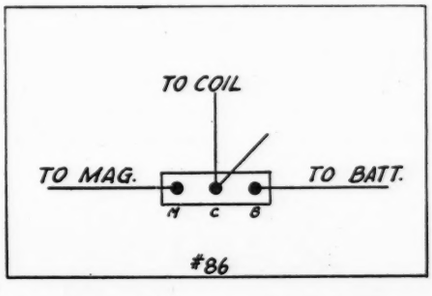
WE do not have the maximum r.p.m.'s of this engine, but at 2000 r.p.m., the brake horsepower is 26. On the new Chevrolet, which will be announced at the New York automobile show, the engine will develop 35 hp. at 2200 r.p.m.

Switch Needed for Starting Fordson

Will you please tell me if it will hurt the magneto on a Fordson tractor to connect a 6-volt storage battery to the magneto post, leaving the coil box wire attached in order to start the tractor.—Chris Doughty, Doughty Motor Co., Leon, Kansas.

CONNECTING a 6-volt storage battery to the magneto terminal for the purpose of starting the tractor, is injurious to the magneto. The current flowing through the coils weakens the magnet. A much better way of handling this is to mount a single pole, double throw, porcelain base switch on the tractor. We are showing a diagram of such a connection.

The left terminal should be connected to the magneto, the center terminal, carrying the lever of the switch, should go to the coil, and the right-hand terminal, designated as "B" should go to the battery. To start the tractor throw the switch to the right so that "C" and "B" are connected and you can start on battery current without using any battery current through the magneto. As soon as the tractor has started, snap the switch across to "M" and continue to run on magneto.



Of course it would be very convenient to carry the battery on the tractor, but if it is too much work to arrange a mounting for it, it is worth while to mount the switch permanently in order to have it handy for starting.

Eliminating Interference

How can I eliminate the interference from a 32-volt Delco light plant when using the radio?—W. E. Hollenbeck, Lentner, Mo.

IF your Delco light generator is not already grounded, the grounding of the generator will help materially in reducing interference. However, before grounding the shell of the generator, check with a 32-volt electric light in series with a test wire to see that the system is not already grounded. If with the system running your check light does not light up, you can safely ground the shell or frame of the generator. In addition to this you should get a large condenser of probably 15 to 20 microfarads and shunt this directly across the generator terminals. Such a condenser can be had from almost any radio manufacturer, as these are generally used where interference is annoying.

Eccentric Commutator Evidently

I have noticed on an old four-cylinder Essex that the car has a higher charging rate at low speed than it has at 35 or 40 m.p.h. At 20 m.p.h. the ammeter shows about 12 amp. but at 40 m.p.h. it scarcely reaches 5. Why is this?—M. R. Rodriguez, P. O. Box 350, Ponce, Porto Rico.

IT is perfectly natural for the charging rate to reduce slightly at high speed, but the amount that yours reduces seems to indicate that the commutator is eccentric and throws the brushes out of contact. We believe that turning this commutator down on a lathe and fitting it with new brushes will overcome this trouble.

Haynes Valve Timing

Please let me know the best valve setting for a 1919 Haynes when new timing gears are put in.—J. H. Conrad, Conrad Auto Repair Shop, 223 N. Queen St., Lancaster, Pa.

THE valves of the 1919 Haynes should be timed so that the intake opens at 5 deg. past top dead center and the exhaust closes at 2 deg. past top dead center.

PURRS AND PINGS

LETTERS to the editor from those whose "attention has been called"; from those who point with pride and those who view with alarm, from those who are easy to please and those who are hard to please; from those who are happy when they find a good thing and those who are happier when they find something they consider not so good; from those who boost and those who knock; from those who see the doughnut and those who see the hole; in other words, Dear Subscriber, from you and you and you—as well as from the man who borrows your copy of MOTOR AGE *or reads it over your shoulder.*

Never too Busy to Read His Favorite

FERNDALE, CAL.—I like all of MOTOR AGE. I am pretty busy and don't have much time, but I always take time to read the MOTOR AGE. It is one of the best motor magazines out and I keep all the old copies. I still get lots of good out of them.—*W. C. Rees.*

A Lost Sheep Comes Back to the Fold

TREMONT, ILL.—Please give my renewal your immediate attention as I have been lost without the journal. —*Geo. L. Gerstner.*

"But There's None Can Compare With——"

THOREAU, NEW MEX.—I have taken many other automobile magazines but never found any which would compare with MOTOR AGE.—*E. H. Youngblood.*

Perpetual Progress

KENNEY, ILL.—It would be difficult for me to say which department I like best for I think the magazine is all very good and getting better all the time.—*Wm. A. Leming.*

All There is, is All Good

JEWETT CITY, CONN.—What interests me most about MOTOR AGE? All of it!—*J. Howard Davis.*

Related to Eddie?

WARSAW, ILL.—I like all departments in repairs.—*Henry Windsor.*

"Very Much" Suits Us

LARNED, KAN.—I enjoy your magazine very much.—*Chas. T. Combs.*

Hay! Hay!

HAYTI, S. D.—I like all departments in MOTOR AGE.—*B. J. Kallemeyn.*

Potent in More Ways Than One

PITTSBURGH, PA.—Lesson No. 6 in Salesmanship Made Easy, regarding the diverting of the prospect's attention, is quite clever and original. Kindly send, by return mail, prices (in gross lots) on mechanical red hots and "Those Jazz Babies." By distributing these among our salesman force of three thousand, wonderful results should be forthcoming.—*J. S. Longdon (alias Long gone).* P. S.—Include a free sample of the contents of the bottle shown in the prospect's hip pocket. Also advise what makes Tim Toople so bow-legged.

Making Appreciation Mutual

MARMARTH, N. D.—I appreciate all of MOTOR AGE.—*Harold Scott.*

Such Popularity Must be Deserved

WASHINGTON, D. C.—MOTOR AGE is THE magazine of its kind. It increases in popularity with me with each new issue. Always for MOTOR AGE.—*S. E. Garber.*

M. A. Helps Employee Win Boss' Esteem

ROANOKE RAPIDS, N. C.—We are pleased at the interest in his work shown by our employee through his subscription to MOTOR AGE, a good trade paper.—*Joyner Motor Co.*

Best Friend But Not Severest Critic

PORTLAND, ORE.—I am very glad to say that the MOTOR AGE is one of my best friends in my work.—*C. C. Henderson.*

What a Grand and Glorious Feeling!

CADIZ, KY.—I feel like I can't do without MOTOR AGE.—*S. E. Freeman.*

A Clear Case of Value

STOCKHOLM, WIS.—As a reader of your paper I am interested in the Readers' Clearing House and have learned a great deal from this department.—*Edwin Sundvall.*

A Superlative for R. C. H.

LONGVIEW, WASH.—I find the Readers' Clearing House the most interesting feature.—*H. M. Morrison.*

A Square Deal From a Dealer

COLUMBUS, MISS.—Sales and service of cars are the most interesting features to me.—*C. F. Humphrey.*

But Read it All

LOS ANGELES, CAL.—I like the Readers' Clearing House.—*F. T. James.*

A Lollypop Says Popp

CHICAGO, ILL.—I enjoy your magazine greatly.—*John G. Popp.*

A Wholesome Like

FRESNO, CAL.—I like all departments of MOTOR AGE.—*Leslie M. Howder.*

Prices, Weights and Equipment of Current Passenger Car Models

Important Changes in Specifications and Price Tables since last issue:

CHRYSLER
Price Changes

LA SALLE
Price Changes and New Models

OVERLAND
1928 Prices and New Models

PACKARD
Price Changes and New Models

Passengers and Model	F.O.B. Price	Doors	Shipping Weight	Standard Equipment
AUBURN				
"76"				
2-4p. Roadster				aeghmnprw
5-p. Touring				aeghmnprw
Cabriolet				aeghmnpru
5-p. Sp. Sedan				aeghimnpru
5-p. Sedan				aeghjmnpru
"88"				
2-4p. Roadster				aeghmnprw
Speedster				aeghmnprw
5-p Touring				aeghmnprw
Cabriolet				aeghmnpru
5-p. Phaeton Sed.				aeghmnpr
5-p. Sp. Sedan				aeghimnpru
5-p Sedan				aeghjmnpru
"115"				
2-4p. Roadster				aeghmnprw
Speedster				aeghmnprw
5-p. Touring				aeghmnprw
7-p. Touring				aeghmnprw
Cabriolet				aeghmnpru
5-p Phaeton Sed.				aeghmnpr
5-p. Sp. Sedan				aeghimnpru
5-p. Sedan				aeghjmnpru
7-p. Sedan				aeghjmnpru
BUICK				
"115"				
4p. DeL. Rdstr.	$1195	2	3000	aghmnr
5p. Touring DeL.	1225	2	3040	aghmnr
2-4p. Coupe	1195	2	3110	aghmnr
5p. 2d. Sedan	1195	2	3215	aghmnr
5p. 4d. Sedan	1295	4	3300	aghmnr
4p. Ctry. Club	1275	4	3190	aghmnr
5p. Town Bro'm.	1375	4	3305	aghmnr
"121"				
4p. Coupe	1465	2	3800	aghmnr
5p. 4d. Sedan	1495	4	3870	aghmnr
5p. Town Bro'm.	1575			aghmnr
"128"				
2-4p. Sp. Rdster	1495	2	3655	aghmnr
4p. Sp. Touring	1525	4	3735	aghmnr
5p. Coupe	1850	2	3940	aghmnr
8p. Ctry. Club	1765	2	3905	aghmnr
8p. Bro. Sedan	1925	4	4050	aghmnr
7p. Sedan	1995	4	4115	aghmnr
CADILLAC "341"				
"Fisher"				
2-4p. Roadster	$3350	2	4440	aeghlmnprx
5p. Phaeton	3450	4		aeghilmnprx
5p. Sp. Phaeton	3950	4		Beghilmnprsx
7p. Touring	3450	4	4665	aeghlmnprx
2-4p Coupe	3295	2	4700	aeghlmnprx
2-4p. Conv. Coupe	3495	2	4595	aeghlmnprx
5p. Coupe	3495	2	4730	aeghlmnprtx
5p. Sedan	3595	4	4845	aeghlmnprtx
5p. Town Sedan	3395	4	4845	aeghilmnprux
7p. Sedan	3695	4	4935	aeghlmnprtx
5p. Imp. Sedan	3745	4	4880	aeghlmnprtx
7p. Imp. Sedan	3895	4	5065	aeghlmnprtx
5p. Imperial Cab.	3745	4		aeghlmnprtx
7p. Imperial Cab.	3895	4		aeghlmnprtx
"Fleetwood"				
5p. Sedan	4095	4		aeghlmnprtx
5p. Sedan Cab.	4095	4		aeghlmnprtx
7p. Sedan	4195	4		aeghlmnprtx
7p. Sedan Cab.	4195	4		aeghlmnprtx
5p. Imperial	4245	4		aeghlmnprtx
5p. Imperial Cab	4245	4		aeghlmnprtx
7p. Imperial	4445	4		aeghlmnprtx
7p. Imperial Cab.	4445	4		aeghlmnprtx
Town Cab Con	5000	4		aeghlmnprtx
Town Cab Con	5500	4		aeghlmnprtx
Lim Bro'm Con	5500	4		aeghimnprtx
CHANDLER				
"Big Six"				
7p. Touring	$1695	4	3360	ahmnw
5p. Met. Sedan		4	3570	ahjmnu
4p. Coupe	1675		3435	ahmn
3p. Ctry. Club	1675		3435	ahmn
7p. Sedan DeL.	1795	4	3725	ahmntuv
5p. Royal Sed.		4	3645	ahmnptx
Cabriolet				
"Spec. Six"				
5p. Touring	995	4	2475	ah
5p. Sportster	1165	4	2650	ahw
5p. Sedan	995	4	2685	ah
3p. Coupe	1035	2	2620	ah
5-p. Cab. Tr. Sed.	1085			
2-4p. Coupe	1150	2	2650	ah
Cabriolet	1215			
"Roy. St. 8"				
7p. Touring	1995	4	3645	ahjmnpwx
4p. Coupe	1995	2	3610	ahmnoptx
4p. Ctry. Club	1995	2	3610	ahmnopx
5p. Sedan	1995	4	3760	ahmnoptx
7p. Sedan	2195	4	3870	ahmnoptx
3-5p. Cabriolet				
CHEVROLET				
2p. Roadster	495	2		dhr
5p. Touring	495	4		dhr
5p. Coach	535	2		dhr
2p. Coupe	595			
5p. Sedan	675	4		dhr
2-4p. Cabriolet	665	2		uhru
5p. Imp. Land	715	4		dhru
CHRYSLER "52"				
5p. Touring	$ 750	4	2130	ahr
2-4p. Roadster	725	2	2075	ahr
2p. Club Coupe	725	2	2205	ahr
5p. Sedan	735	2	2300	ahr
5p. Sedan	795	4	2375	ahr
2-4p. DeL. Coupe	795	2	2240	ahr
5p. De L. Sedan	875	4	2375	ahr
"62"				
5p. Touring	1095	4	2740	aghnr
2-4p. Roadster	1175	2	2705	aeghnrw
2p. Bus Coupe	1125	2	2780	aghnr
5p. Sedan	1145	2	2855	aghnr
5p. Sedan	1245	4	2905	aghnr
2-4p. Coupe	1245	2	2855	aghnr
5p. Land. Sedan	1295	4	2940	aghnr
"72"				
2-4 Sp. Roadster	1595	2	3005	aeghmnrwx
4p. Coupe	1595	2	3160	aghmnrux
2-4p. Coupe	1545	2	3130	aghmnrx
5p. Roy. Sedan	1595	4	3225	aghmnrtx
5p. Town Sedan	1645	4	3270	aghjmnrux
2-4p. Con't Coupe	1745	2	3100	aghmnrx
5p. Crown Sedan	1795	4	3235	aghmnrtx
Town Cab	3535			
Imp. "80"				
2-4p. Roadster	2795	3		aeghlmnrwx
5p. Sedan	2 45	4	4185	aghlmnrx
7p. Sedan	30 5	4		aeghlmnrx
5p. Town Sedan	2 95	4	4140	aeghlmnrx
7p. Sedan Lim	3495	4	4285	aeghlmnrx
CUNNINGHAM				
"V-7"				
7p. Touring	$6850	4	4600	Ceghjklmnp rsx
4p. Sp. Touring	6150	4	4500	Ceghjklmnp rsx
4p. Coupe	7600	2	4700	Ceghjklmnp rtx
6p. Limousine	8100	4	5000	Ceghjklmnp rtx
DAVIS "99"				
4p. Polo Rdster	$1885	2	3095	aeghmnr
5p. Touring	1885	4	3125	aeghimnrs
4p. Coupe	1885	2	3145	aeghmnr
5p. Emp. Sedan	1885	4	3275	aeghmnort
DIANA "St. 8"				
5p. Phaeton	$1695	4	3100	agmn
5p. Roy. Roadster	1795	2	2995	agmnw
5p. P.B. Rdstr	1895	2	2995	Bgmnw
5p. Cab. Rdstr	1995	2	3160	agmnn
5p. Cab Rdstr	2295	2	3160	agmnn
5p. 4d. Sedan	2095	4	3275	aghmnot
5p. 2d. Sedan	1795	2	3170	aghimno
DODGE BROS.				
"124"				
5p. Touring	$795	4	2581	Ar
2p. Roadster	795	2	2454	Ar
2p. Sp. Roadster	845	2	2530	Der
5p. Sp. Touring	845	4	2679	Der
"128"				
5p. Sedan	875	4	2600	Aehr
5p. DeL. Sedan	9 0	4	2609	Aehrt
2p. Coupe	855	2	2428	Aehrt
4p. Cab. Rdstr	955	2	2463	Behr
"Victory 6"				
5-p. Sedan	1095	4		
"Senior"				
4p Cab. Rdstr	1595	2	3353	Cehmnrtx
5p. Sedan	1495			ehr
8p. Sedan	1595	4	3412	Cehmnrtx
4p Coupe	1570	2	3315	Cehmnrtx
du PONT "E"				
4p. Roadster	$2800		3700	afghkmnprx
5p. Touring	2800	4	3850	afghikmnprx
4p. Coupe	3200		3850	afghkmnprtx
5p. Sedan	3400		4100	afghkmnprtx
5p. Con. Sedan	3750	4	4100	Bfghikmnprt x
DURANT				
"55"				
Coupe	$ 795			a
5-p. Sedan	795	2		a
5-p. Sedan	895	4		a
"65"				
5-p. Touring	795	4		aghmn
2-4p. Sp. Rdster	1025	2		Beghkmn
2-4p. Coupe	975	2		aghmn
5-p. Sedan	975	2		aghmn
2-4p. Collap. Cab.	1045	2		aghmn
5-p. Sedan	1075	4		aghmn
5-p. Town Sedan	1175	4		Beghkmn
"75"				
5-p. Sedan	1385	4		aghmn
5-p. Town Sedan	1550	4		Beghkmn
ELCAR				
"70"				
4p. Roadster	$1295	2	2580	ahnr
5-7p. Touring	1295			ahnr
4p. Brougham	1295	2	2670	ahnr
5p. Sedan	1295	4	2750	ahnr
"8-73" Std.				
2-4p. Roadster	1395	2		ahnr
5p. Touring	1395			ahnr
2-4p. Coupe	1395	2		ahnr
5p. Sedan	1395	4		ahnr
"8-78 Royal"				
4p. Roadster	1495			aeghmnor
5p. Touring	1495			aeghmnor
4p. Coupe	1495			aeghmnor
5p. Sedan	1495			aeghmnor
"8-82"				
5-7p. Touring	1695			aeghnor
2-4p. Roadster	1695	2		aeghmnor
4p. Coupe	1695	2		aeghmnor
5p. Prin. Sedan	1895	4		aeghnoprux
"8-91"				
2-4p. Roadster	1995			aeghmnoprx
4p. Coupe	2295			aeghmnoprux
5p Prin. Bro'm	2295	4		aeghmnoopr ux
5p. Prin Sedan	2295	4		aeghmnoopr ux
"8-92"				
5-7p. Touring	2465	4		beghmnprx
5p. Std. Sedan	2465	4		aeghmnoprtx
7p. Std. Sedan	2565	4		aeghmnoprtx
ERSKINE "6"				
5n. Tourer	$915	4	2300	aeghnr
4p. Spt. Rdstr	965		2305	Beghnr
5 p. Club Sedan	7951	2		
2p Bus. Coupe	895	2	2265	aeghnr
4p. Spt. Coupe	965	2	2330	aeghnr
5p. Sedan, 4d.	965	4	2425	aeghnr
ESSEX				
"Super Six"				
2-4p. Roadster				ahmnr
5-p. Spt. Touring				ahmnr
2-p. Coupe				ahmnr
5-p. Coach		2		ahmnr
5-p. Sedan		4		ahmnr
FALCON-KNIGHT				
"12"				
4p. Roadster			2450	ghr
Touring				
4p. G.G. Rdster.			2500	Beghkmnrwx
2p Coupe	1095		2565	ghr
5p. Brougham	1095	2	2665	ghr
5p. Sedan	1195	4	2700	ghor
5p. Landau			2735	ghrtu

KEY TO SYMBOLS:

A—Wood wheels with spare.
a—Wood wheels.
B—Wire wheels with spare
b—Wire wheels.
C—Optional wheels with spare.
c—Type of wheels optional.

D—Disk wheels with spare.
d—Disk wheels.
e—Front and rear bumpers
f—Front bumper.
g—Shock absorbers or snubbers.
h—Automatic windshield wiper.

i—Trunk and trunk rack.
j—Trunk rack, no trunk.
k—Spare tire.
l—Spare tire lock.
m—Engine heat indicator.
n—Dash gasoline gage.

o—Car heater.
p—Cigar lighter
r—Rear traffic signal.
s—Spotlight.
t—Vanity and smoking set.
x—Smoking set.

v—Vanity set.
w—Windshield wings.
z—Clock.
*—Overall length.
§—Prices on application.

Prices, Weights and Equipment of Current Passenger Car Models

Passenger and Model	F.O.B. Price	Doors	Shipping Weight	Standard Equipment
FORD "A"				
2-4p. Roadster	$ 385	2	....	Beghmnr
5p. Phaeton	395	4	....	Beghnr
2p. Coupe	495	2	....	Beghnr
2-4p. Spt. Coupe	550	2	....	Beghnr
5p. Tudor Sedan	495	2	....	Beghnr
5p. Fordor Sedan	570	4	....	Beghnr
FRANKLIN				
"Series 12"				
119" W.B.				
3p. Coupe	$2490	..	3400	an
4p. Victoria	2740	..	3440	an
5p. Sedan	2790	..	3500	an
5p. Ox. Sedan	2815	..	3500	an
5p. Spt. Sedan	2910	..	3550	an
3-5p. Con'vt Cpe.	2925	..	3450	an
128" W.B.				
2-4p. Sp. Runab't	2975	..	3390	an
5p. Sp. Touring	2975	..	....	an
7p. Touring	3060	..	3540	an
7p. Sedan	2980	..	3780	an
7p. Ox. Sedan	3015	..	3780	an
7p. Limousine	3080	..	3780	an
GARDNER				
"75 Std."				
4-p. Roadster	$1195	2	2995	ahmnr
5-p. Sp. Coupe	1295	2	3290	ahjmnr
4-p. Vic. Coupe	1295	2	3290	ahjmnr
5-p. Club Sedan	1395	4	3265	ahmnr
5-p. Std. Sedan	1495	4	....	ahmnr
"75 DeL"				
4-p. Roadster	1295	2	2995	aeghmnr
5-p. Sp. Coupe	1395	2	3290	aeghjmnr
4-p. Vic. Coupe	1395	2	3290	aeghjmnr
5-p. Club Sedan	1495	4	3265	aeghmnr
5-p. DeL. Sedan	1595	4	....	aeghmnr
"85"				
4-p. Roadster	1695	2	3040	Aeghmnr
5-p. Brougham	1875	4	3360	Aeghimnr
5-p. Sedan	1895	4	3380	Aeghmnr
Cus. Coupe	2095	..	....	
"95"				
2-4p. Roadster	2095	..	....	
2-4p. Collap. Cpe.	2495	..	....	
5-p. Brougham	2275	..	....	
5-p. Sedan	2295	4	....	
GRAHAM-PAIGE				
"610"				
"614"				
"619"				
"629"				
"835"				

Passenger and Model	F.O.B. Price	Doors	Shipping Weight	Standard Equipment
HUDSON				
"S"				
2-p. Roadster		..	....	ahmnr
Coupe		..	2	ahmnru
5-p. Coach		..	2	ahmnru
5-p. Sedan		..	4	ahmnru
"O"				
7-p. Phaeton		..	....	ahmnr
Landau Sed		..	....	ahmnru
5-p. Sedan		..	....	ahmnru
Victoria		..	....	ahmnru
7-p. Sedan		..	....	ahmnru
HUPMOBILE				
"A"				
4p. Roadster	$1335	2	....	aghnr
7p. Phaeton	1395	4	....	eghnr
5p. Sedan 2d	1345	2	....	eghjnr
4p. Coupe	1385	2	....	eghnr
5p. Sedan	1395	4	....	eghnr
"E-4"				
5p. Touring	1795	4	3300	eghnrx
7p. Touring	1895	4	3360	beghnrvx
2-4p. Roadster	1895	2	3355	ecghnrvx
5p. Brougham	2095	2	3515	j
2-4p. Coupe	2195	2	3465	dghrx
5p. Sedan	2195	4	3545	aghrx
5p. Victoria	2195	2	3525	aeghnrx
7p. Sedan	2345	4	3360	ehr
7p. Sedan Lim.	2520	4	3360	aehnrx
"M-8"				
Roadster		..	....	
5p. Sedan		..	2	
JORDAN				
"R"				
4p. Blue Boy	$1745	4	2800	Beeghkmnrx
4p. Spt. Salon	1595	2	2775	aghjmnrx
2-4p. Tomboy	1595	2	2650	aghmnrx
5p. Sedan	1595	4	2775	aghmnrtx
"J-1"				
4p. Playboy	1545	2	2915	aghmnrx
2-4p. Sp. Coupe	1695	2	3070	aghmnrx
5p. Cus. Sedan	1695	4	3200	aghmnrtx
4p. Cus. Vict.	1695	2	3200	aghimnrtx
"JE"				
4p. Collap. Coupe	2195	2	3185	aghmnrx
4p. Perm. Coupe	2195	2	3185	aghmnrx
5p. Victoria	2195	2	3275	aghimnrtx
5. Sedan	2195	4	3300	aghmnrtx
KISSEL				
"6-70"				
4p. Cpe. Roadster	1595		2915	ahmr
5p. Bro'm Sedan	1495	4	3065	ahmr
"8-80"				
125" W.B.				
5p. Phaeton	1885	4	3240	ahmnr
4p. Speedster	2095	2	3155	ahmnr
4p. Cp. Rdstr	2095	2	3343	ahmnr
5p. Spec. Bro'm	1995	2	3345	ahmnr
5p. Bro'm Sedan	2095	4	340	ahmnr
5p. Conv. Bro'm	2495	..	3518	ahmnr
132" W.B.				
7p. Touring	1985	4	3360	ahmnr
4p. Tourster	2095	4	315	ahmnr
5p. Bro'm Sedan	2295	4	345	ahmnr
7p. Sedan	2495	..	3630	ahmnr
"8-90"				
4p. Coupe Rdstr	1995	..	....	
5p. Brougham	1895	..	....	
5p. Sedan	1995	..	....	
4p. Victoria	1995	..	....	
"8-90"				
131" W.B.				
5p. Phaeton	2185	4	3220	ahmnr
4p. Speedster	2395	2	3360	ahmnr
4p. Cpe. Rdstr	2395	2	3578	ahmnr
5p. Spec. Bro'm	2295	2	3671	ahmnr
5p. Bro'm Sedan	2395	4	3760	ahmnr
5p. Conv. Bro'm	2795	..	3863	ahmnr
139" W.B.				
7p. Touring	2285	4	3630	ahmnr
4p. Tourster	2395	4	3335	ahmnr
5p. Bro'm Sedan	2595	4	3755	ahmnr
7p. Sedan	2795	4	3975	ahmnr
5p. Sedan DeL	2985	4	3910	aeghimorvx
7p. Sedan DeL	3495	4	4080	aeghimorvx
7p. Ber. Sedan	3585	4	4125	aeghimorvx

Passengers and Model	F.O.B. Price	Doors	Shipping Weight	Standard Equipment
LA SALLE				
125" W.B				
2-4p. Roadster	$3485	2	3665	aeghlmnprx
5p. Phaeton	24 5	4	3680	aeghlmnprx
4p. Sp. Phaeton	29.5	4	4080	Beghjkmnprsx
2p. Bus. Coupe	2350	..	....	.....
5p. Family Sedan	2350	..	....	.....
2-4p. Coupe	2450	2	3875	aeghlmnprx
2-4p. Conv. Cpe.	2550	2	3800	aeghlmnprx
4p. Victoria	2550	2	3895	aeghlmnprvx
5p. Town Sedan	2495	4	3975	aeghlmnprx
5p. Sedan	2495	4	4000	aeghlmnprtx
2p. Coupe	3600	2	....	aeghlmnprtx
5p. Sedan	3800	4	....	aeghlmnprtx
5p. Town Cab	4500	4	....	
5p. Trans. Cab	4700	4	....	
134" W.B.				
7p. Family Sedan	2575	..	....	.....
5p. Coupe	2625	..	....	.....
5. Club Sedan	2675	..	....	.....
7p. Sedan	2775	4	4400	aeghlmnprtx
5p, Imp. Sedan	2775	4	4315	aeghlmnprtx
7p. Imp. Sedan	2875	4	....	aeghlmnprtx
LINCOLN				
"8"				
2p. Spt. Rdster	$4600	2	4930	aegklnprx
2-4p Club Rdstr	4600	..	5010	aeghklnprx
7p. Spt. Touring	4600	4	4940	aegklnprx
4p. Spt. Phaeton	4600	4	4910	begjklnprwx
4p. Coupe	4600	2	4805	aegklnprx
4p. Sedan	4800	4	4930	aegiklnprx
5p. Sedan	4800	4	5010	aegklnprtx
2p. Coupe	5000	..	4720	aeghklnprx
7p. Sedan	5000	4	5050	aegklnmprtx
7p. Limousine	5200	4	5165	aegklnprtx
4p. Berline	$5500	..	5115	aeghklnprx
7p. Limousine	6000	..	5380	aeghklnprx
7p. Brougham	6400	..	5025	aeghklnprx
6p. Ber. Landau	6500	..	....	aeghklnprx
7p. Cabriolet	6600	..	5100	aeghklnprx
7p. Le Baron Cab.	7000	..	5200	aeghklnprx
7p. Holbrook Cab.	7200	..	5280	aeghklnprx
7p. Collap. Cab	7300	..	5140	aeghklnprx
LOCOMOBILE				
"8-70"				
5p. Brougham	$1975	4	3525	afghkmnrx
5p. Sedan	1975	4	3575	afghkmnrx
4p. Vic. Coupe	2100	2	3600	afghkmnrx
"8-80"				
4p. Spt. Touring	2850	..	3972	aeghklmnprtuvx
4p. Coupe	2975	2	....	
4p. Collap. Coupe.	3000	2	3780	aeghklmnprtuvx
5p. Sedan	2850	4	3950	aeghklmnprtuvx
5. Brougham	2900	4	3990	aeghklmnprtuvx
7p. Sedan	3350	4	4140	aeghklmnprtuvx
7p. Sub. Sedan	3500	4	4280	aeghklmnprtuvx
"48"				
4p. Sportlf	[illegible]	4	5030	afghjklrsx
Roadster	[illegible]	..	....	
7p. Touring	[illegible]	4	5330	afghklrsx
7p. Tour Lim	[illegible]	4	5640	afghklrstx
6p. Brougham	[illegible]	4	5464	afghklrstx
5p. Vic. Sedan	[illegible]	4	5600	afghklrstx
7p. Lim. Enc. Dr.	[illegible]	4	5868	afghklrstx
7p. Cabriolet	[illegible]	4	5624	afghklrstx
"90"				
4p. Sportif	5900	4	4475	aeghiklmnprtuvx
4p. Roadster	5900	2	4370	aeghklmnprtuvx
7p. Touring	6000	..	....	aeghklmnprtuvx
5p. Vic. Sedan	7300	4	4842	afghimprtx
7p. Suburban	7500	4	4930	afghmprtx
4p. Vic. Sed	7450	..	....	aeghklmnprtuvx
7p. Town Bro'm	7500	4	4615	afghmprtx
7p. Cabriolet	7500	4	4615	afghmprtx
Collap. Cab	7750	..	....	aeghklmnprtuvx

Passengers and Model	F.O.B. Price	Doors	Shipping Weight	Standard Equipment
MCFARLAN				
"Str. 8"				
131" W.B.				
2p. Roadster	$3050	2	3400	afghlmnprx
5p. Touring	2650	4	3400	afghlmnprx
4p. Sp. Phaeton	3180	4	3 00	afghlmnprx
3p. Town Coupe	3180	2	3650	afghlmnprx
5p. Sedan	3180	4	3650	afghlmnprx
5p. Brougham	3180	4	3650	afghlmnprx
5p. Town Car	4600	4	3750	afghlmnprx
136" W.B.				
7p. Sedan	3680	4	4000	afghlmnprx
7p. Sub. Sedan	3780	4	4000	afghlmnprx
"TV6"				
2p. Roadster	5800	2	4300	afghlmnprx
5p. Spt. Tour	5600	4	4700	afghlmnprx
7p. Touring	5700	4	....	afghlmnprx
5p. Sedan	6720	4	5200	afghlmnprx
7p. Sedan	6720	4	5200	afghlmnprx
7p. Sedan	6920	4	5200	afghlmnprx
7p. Cabriolet	9000	4	5200	afghlmnprx
MARMON				
"68"				
2p. Roadster	$1495	..	....	
5-p. Sedan	1395	4	....	aeghmnorst
4-p. Vic. Coupe	1450	..	....	aeghmnorst
2-p. Coupe	1395	..	....	aeghmnorst
"78"				
2p. Roadster	1895	2	....	ahlmnprwx
4p. Speedster	1965	4	....	ahlmnprwx
2-4. Collap. Cpe.	1995	2	....	ahlmnprx
2p-4. Coupe	1895	2	....	ahlmnprx
4p. Vic. Coupe	1995	2	....	ahlmnprx
5p. Sedan	1895	4	....	ahlmnprx
"E-75"				
2p. Speedster	3485	2	4251	aeghlnprx
4p. Speedster	3485	2	4256	aeghlnprx
5p. Phaeton	3485	4	4017	aeghlnprx
7p. Tour. Speed	3565	4	4480	aeghilnprwx
2p. Coupe Rdstr	3565	2	4374	aeghlnprx
5p. Town Coupe	3195	2	4452	aeghlnprx
2p. Coupe	3485	2	4373	aeghlnprtx
4p. Victoria	3485	2	4346	aeghlnprtx
5p. Brougham	3565	4	4525	aeghilnprtx
5p. Sedan	3565	4	4498	aeghlnprtx
7p. Sedan	3640	4	4620	aeghlnprtx
5p. Cus. Sedan	3960	4	4515	aeghlnprtx
7p. Cus. Sedan	4075	4	4678	aeghlnprtx
7p. Cus. Limou	4175	4	4718	aeghlnprtx
MOON "6-60"				
3p Roadster	$925	2	2295	an
5p. Phaeton	995	4	2340	an
3-5p. DeL. Rdstr.	1095	2	2330	dn
3-5p. Roy. Rdstr.	1195	2	2330	anw
3-5p. Roy. Cab.	1265	2	2575	an
3-5p. Cab. Rdstr.	1165	2	2575	dn
5p. Coach	1045	2	2420	an
5p. 2d. Sedan	1145	2	2520	dn
5p. Roy. Sedan	1195	2	2520	ahn
5p. 4d. Sedan	1245	4	2605	dn
5p. Roy. Sedan	1295	4	2605	ahn
5p. Cust. Sedan	1395	4	2605	ah
"A"				
5p. Touring	1195	4	2560	dn
5p. Roy. Rdster	1395	2	2600	dn
5p. Collap. Cab	1795	2	2720	
5p. Sedan DeL	1395	2	2710	dno
5p. Sedan DeL	1545	4	2860	dno
"6-72"				
5p. Roy Roadster	1395	2	2630	aghmn
5p. RoyCabRdstr	1445	2	2815	aghmn
5p. Std. Sedan 2d	1395	2	3050	aghimn
5p. Std. Sedan 4d	1445	4	3080	aghmn
5p. Royal Sedan	1445	2	3050	aghimn
5p. Royal Sedan	1545	4	3080	aghmn
"8-80"				
5-p. C.C. Sedan	2195	4	....	chmnr
5-p. Sedan	2195	4	....	chmnr
NASH				
"Std. 6"				
5p. Touring	$865	4	2325	Dghnr
2-4p. Conv't Cab	995	2	2505	Deghnr
2p. Coupe	875	2	2345	Dghnr
5p. Sedan	895	2	2450	Dghnr
5p. Sedan	995	4	2500	Dghnr
5p Land. Sedan	1085	4	2610	Deghnr

KEY TO SYMBOLS

A—Wood wheels with spare.
a—Wood wheels.
B—Wire wheels with spare.
b—Wire wheels.
C—Optional wheels with spare.
c—Type of wheels optional.

D—Disk wheels with spare.
d—Disk wheels.
e—Front and rear bumpers.
f—Front bumper.
g—Shock absorbers or snubbers
h—Automatic windshield wiper.

i—Trunk and trunk rack.
j—Trunk rack, no trunk.
k—Spare tire.
l—Spare tire lock.
m—Engine heat indicator.
n—Dash gasoline gage.

o—Car heater.
p—Cigar lighter.
r—Rear traffic signal.
s—Spotlight.
t—Vanity and smoking set.
u—Smoking set.

v—Vanity set.
w—Windshield wings
x—Clock.
*—Overall length.
§—Prices on application

Prices, Weights and Equipment of Current Passenger Car Models

Passengers and Model	F.O.B. Price	Doors	Shipping Weight	Standard Equipment
"Special"				
4p. Roadster	1225	2	2980	Dghnr
5p. Touring	1135	4	2980	Dghnr
2-4p. Cabriolet	1290	4	3070	Dghnr
2p. Bus. Coupe	1165	2	3030	Dghnr
5p. Sedan	1215	2	3150	Dghinrt
4p. Victoria	1295	2	3170	Dghnr
5p. Sedan	1335	4	3250	Dghnrtuv
5p. Coupe	1445	4	3380	Dghinrt
"Advanced" 121" W.B.				
4p. Roadster	1475	2	3400	Dghmnr
5p. Touring	1340	4	3400	Dghmnr
5p. Sedan	1425	2	3620	Dghimnruv
5p. Sedan	1545	4	3650	Dghmnruv
127" W.B.				
7p. Touring	1440	4	3500	Dghmnr
5p. Sp. Touring	1540	4	3500	Bghimnr
4p. Victoria	1595	2	3640	Dghmnruv
4p. Coupe	1775	2	3650	Dghmnr
5p. Amb. Sedan	1925	4	3820	Dghinprtuvx
7p. Sedan	1990	4	3830	Dghnprtuvx
7p. Imp. Sedan	2165	4	3900	Dghnprtx
OAKLAND 'AA-6'				
5p. Sp. Phaeton	$1095	4	2620	aehjn
4p. Sp. Rdster	1075	2	2730	aehjn
2-4p. Cabriolet	1145	2	2825	ahn
5p. 2d. Sedan	1045	2	2890	ahnu
3p. Land. Coupe	1045	2	2805	ahn
5p. 4d. Sedan	1145	4	2980	ahnu
5p. Land. Sedan	1265	4	3050	aehnou
OLDSMOBILE "6"				
Sp. Roadster				ceghmnr
5-p. Sp. Touring				ceghmnr
2-p. Coupe				aeghmnr
5-p. Sedan 2d		2		aeghmnr
5-p. Sedan 4d		4		aeghmnr
5-p. Landau Sed				aeghmnr
2-4p. Spt. Coupe				ceghmnr
OVERLAND "4" Whippet				
5p. Touring	$455	4	1985	ag
2p. Roadster	485	2		
2-4p. Roadster	525	2	1930	agh
2p. Coupe	535	2	2025	ag
Coupe Cab	545			
5p. Coach	535	2	2075	ag
5p. Sedan	585	4	2185	agh
PACKARD "526"				
4p. Runabout	$2275	2	3620	Deghlmnpx
5p. Phaeton	2275	4	3665	Deghlmnpx
5p. Sedan	2285	4	4000	Deghlmnprtx
2-4p. Coupe	2350		3950	
4p. Conv't Cpe	2425		3875	
"533"				
5p. Phaeton	2385		3745	
4p. Runabout	2385		3700	
7p. Touring	2485	4	3865	Deghlmnprx
4p. Coupe	2685	2	4000	deghint
5p. Club. Sedan	2685	4	4085	Deghilmnpr tx
7p. Sedan	2685	4	4145	Deghlmnprtx
7p. Sedan Lim	2785	4	4205	Deghlmnprtx
"443"				
4p. Runabout	3875		4350	Djk
5p. Phaeton	3875		4370	Djk
7p. Touring	3975	4	4410	Deghjklmnp rx
2p. Coupe	4150			
2p. Conv't Cpe	4250			
4p. Coupe	4450		4635	Djk
5p. Club Sedan	4450	4	4710	Deghlklmnp rtx
7p. Sedan	4450	4	4820	Deghjklmnp rtx
7p. Sedan Lim	4550	4	4860	Deghjklmnp rtx

Passengers and Model	F.O.B. Price	Doors	Shipping Weight	Standard Equipment
PEERLESS "6-60"				
2-4p. Roadster	$1295	2	2600	deghlmnr
5p Phaeton	1295	4	2765	aghlmnrw
2-4p. C'pe Rdstr	1345	4	2725	deghlmnr
5p. Sedan	1345	4	2895	deghlmnr
"6-80"				
5p. Phaeton	1395	4	2850	aeghlmnrw
2-4p. Roadster	1495	2	3025	ceghlmnrw
2-4p. Coupe	1565	2	2975	aeghlmnr
5p. 2d. Sedan	1395	2	3000	aeghilnr
5p. Std. Sedan	1595	4	3125	aghmnr.
Spt. Sedan	1795	4	3100	
5p. DeL. Sedan	1795	4	3125	Deghlmnr
"6-90"				
5p. Phaeton	1695	4	2930	aeghlmnrwx
2-4p Roadster	1695	2	2960	aeghlmnrwx
4p. Coupe	1725	2	3050	aeghlmnrx
4p. Sedan	1895	2	3150	aeghilmnrx
5p. Sedan	1895	4	3200	aeghlmnrtx
5p. Landau	1995	4	3250	aeghlmnrtx
"8-69" 126" W.B.				
5p. Coupe	2795		3810	Deghilmnrtx
5p. Sedan	2995	4	3875	Deghlmnrtx
133½" W.B.				
2-4p. Roadster	2985	2	3650	Deghlmnrx
7p. Sedan	3095		3875	Deghlmnrtx
7p. Cus. Sed. Lim.	3295	4	4275	deghimnrtx
5p. Sedan	3495	4	3950	Deghlmnrtx
7p. Sedan	3595	4	4050	Deghlmnrtx
5p. Ber. Lim	3795	4	4100	Deghlmnrtx
PIERCE ARROW "81"				
2p. Runabout	$2900	2	3300	afghlmnrx
4-p. Touring	3100	4	3330	afghlmnrx
Conv't Rdster.	3450	2		afghlmnrx
2p. Coupe	3250	2	3265	afghlmnprtx
5p. Brougham	3250	2	3560	afghlmnprtx
5p. Club Sedan	3300	4	3600	afghlmnprtx
2-4p. Coupe	3350	2	3435	afghlmnprtx
5p. Sedan	3350	4	3600	afghlmnprtx
5p.Sp. Sed. Land	3350	4		afghlmnprtx
5p. Club. Land	3400	4	3605	afghlmnprtx
7p. Sedan	3450	4	3670	afghlmnprtx
4p. Coupe	3450	2	3450	afghlmnprtx
7p. Enc. Dr. Lim	3550	4	3760	afghlmnprtx
"36"				
2p. Runabout	5875	2	4560	afghlrx
4p. Touring	5875	4	4510	afghrx
7p. Touring	5875	4	4585	afghlrx
7p. Sedan	5875	4	4815	sfghlrtx
7p. Lim. Encl	5875	4	4870	afghlrtx
3p. Coupe	6375	2	4760	afghlrtx
4p. Cpe. Sedan	6375	2	4795	afghlrtx
4p. Sedan	6375	4	4830	afghlrtx
7p. Enc. Dr. Lan	6000	4	4895	afghlrtx
7p. Sedan Land	6000	4	4840	afghlrtx
4p. Lim. Encl	6375	4	4880	afghlrtx
4p. Sedan	6475	4	4805	afghlr
2p. Coupe	6600	2	4745	afghlr
4p. Sedan Land	6600	4	4800	afghlrtx
4p. Encl. Land	6600	4	4880	afghlrtx
7p. Fr. Limou	7500	4	4740	afghlrtx
7p. Fr. Landau	8000	4	4865	afghlrtx
PONTIAC "6"				
2-4p. Roadster	$745	2	2230	ahn
2p. Coupe	745	2	2395	ahn
5p. 2d. Sedan	745	2	2430	ahn
4p. Sport Cab	795	2	2400	ahn
5p. Sport Sedan	845	4	2500	aehn
5p. DeL. Landau	925	4	2565	aehn
REO "Flying Cloud"				
2p. Roadster	$1685	2	3300	aeghnr
5p. Brougham	1685	2	3425	aeghinr
2p. Sp. Coupe	1625	2	3320	aeghnr
4p. Victoria	1845	2	3350	aeghnr
5p. Sedan	1845	4	3550	aeghnrt
5p. DeL Sedan	1995	4	3550	aeghnrt
"Wolverine"				
4p. Cabriolet	1195	2	2850	aeghinr
5p. Brougham	1195	2	2960	aehinr
5p. Sedan	1295	4	3070	aeghinr

Passenger and Model	F.O.B. Price	Doors	Shipping Weight	Standard Equipment
ROAMER "8-78"				
2p. Roadster	$1595	2	3225	
2p. Coupe	1750	2	3380	
5p. Sedan	1795	2	3450	
"8-80"				
2p. Coupe	$1985	2	3410	ag
5p. Brougham	1985	2	3440	ag
5p. Sedan	1985	4	3570	ag
"8-85"				
5p. Tourer	2495	4	3650	cg
5p. Sedan	2985	4	3880	cg
7p. Sedan	3285	4	3980	cg
ROLLS ROYCE "Si. Ghost"				
Open Models				Bfghjkmprx
Closed Models				Bfghjkmprtx
"New Phan"				
Open Models				Beghjkmprx
Closed Models				Beghlkmprtx
STAR "4"				
Roadster				
Bus. Coupe				
5-p. Sedan		2		
5-p. Sedan		4		
STEARNS-KNIGHT "F-6-85"				
4p. Roadster	$3250	2	4252	aeghklmnpr wx
4p. Touring	3250	4	4322	aeghjklmnpr wx
4p. Cab. Rdstr	3550	2	4500	aeghklmnopr x
5p. Cus. Sedan	3350	4	4562	aeghjklmno rtx
4p. Coupe	3450	2	4527	aeghklmno rtx
5p. Std. Sedan	3450	4	4572	aeghjklmno rtx
5p. Sedan Lim	3700	4	4647	aeghjklmno rtx
5p. Cus. Sed. Lim	3700	4	4637	aeghjklmno rtx
7p. Sedan	3750	4	4702	aeghklmno rtx
7p. Sedan Lim	3950	4	4777	aeghklmno rtx
"H"				
4-p. Roadster		2		fghmnorx
4-p. Coupe		4		fghmnorx
4-p. Victoria		2		fghmnortx
5-p. Sedan		4		fghmnortx
"J"				
7-p. Touring		4		fghmnorx
7-p. Sedan		4		fghmnortx
7-p. Limousine		4		fghmnortx
Town Car		4		fghmnortx
STUDEBAKER "The Dictator"				
5p. Tourer	$1165	4	3080	aeghlmnr
5p. Du Phaeton	1195	4	3105	aeghlmnr
4p. Sp.Roadster	1245	2	3040	aeghlmnr
2p. Coupe	1195	2	3120	aeghlmnr
4p. Coupe	1295	2	3165	aeghlmnr
4p Victoria	1295	2	3165	aeghlmnr
5p. Sedan	1195	4	3235	aeghlmnr
5p. Sedan Royal	1295	4	3235	aeghlmnr
"Commander"				
4p. Sp. Roadster	1695	2	3330	aeghlmnr
2p. Coupe	1495	2	3395	aeghlmnr
4p. Victoria	1495	2	3510	aeghlmnr
5p. Sedan	1495	4	3570	aeghlmnr
4p. Cpe Regal	1625	2	3465	aeghlmnpr
4p. Vic. Regal	1625	2	3525	eghlmnpr
5p. Sed. Regal	1625	4	3585	aeghlmnpr

Passengers and Model	F.O.B. Price	Doors	Shipping Weight	Standard Equipment
"President 8"				
5-p. Sedan	1985	4		aeghimnrtx
7-p. Sedan	1985	4		aeghjmnrtx
5-p. DeL. Sedan	2250	4		Beghimnrtx
7-p. DeL. Sedan	2250	4		Beghjmnrtx
STUTZ "BB" "Custom" 131" W.B.				
2p. Speedster	$3495	2		aefgilmnprx
4p. Speedster	3595	4		aeghjlmnprx
4p. Speedster	3845	4		aeghjlmnprx
2p. Black Hawk	4895	2		beghjlmnprx
4p. Black Hawk	4945	2		beghjlmnprx
2p. Coupe	3495	2		aeghjlmnprux
4p. Vic. Coupe	3495	2		aeghjlmnprux
5p. Sedan	3570	4		aeghjlmnprux
5p. Brougham	3570	4		aeghjlmnprux
2p. Cab. Coupe	3695	2		aeghjlmnprux
145" W.B.				
7p. Speedster	3895	4		aeghjlmnprx
7p. Sedan	3895	4		aeghjlmnprtx
7p. Seda. Lim	3995	4		aeghjlmnprtx
"Weyman Cus." 131" W.B.				
2p. Black Hawk	4895	2		beghjlmnprx
5p. Sedan	4120	4		aeghjlmnprux
4p. Sedan	4120	2		aeghjlmnprux
4p. Coupe	4120	2		aeghjlmnprux
5p. Landau Sed	4420	4		aeghjlmnprux
145" W.B.				
5p. Sedan	4995	4		aeghjlmnprux
5p. Sedan	4995	4		aeghjlmnprux
7p. Sedan	5245	4		aeghjlmnprtx
7p. Limousine	5495	4		aeghjlmnprtx
7p. Landau Lim	5495	4		aeghjlmnprtx
"Salon Cus."				
5p. PW Sedan	6345	4		aeghjlmnprux
7p. PW Sedan	6345	4		aeghjlmnprtx
7p. Con. T'n Car	6895	4		aeghjimnprt
VELIE "Std. 50"				
5p. Touring	$ 995	2	2670	aehmnr
5p. Coupe	1165	2	2917	aehkmr
5p. Sedan	1165	4	3017	aehkmr
5p. Met. Sedan	1325	4	3087	eghkmr
"6-66"				
5-p. Metro Sed	1195	2		aeghkmnr
5-p. Metro Sed	1265	4		aeghkmnr
2-4p. Metro Cpe	1265	2		aeghkmnr
"6-77"				
5p. Spec. Sedan	1585	4	3365	aeghmnru
5p. Royal Sedan	1635	4	3395	aeghmnru
"8-68"				
5p. Club Phaeton				aeghiknr
5p. Spec. Sedan	2095	4	3640	aeghkrv
5p. Royal Sedan	2095	4	3675	aeghkrv
WILLYS-KNIGHT "Std. 6"				
2-4p. Roadster				aghn
5-p. Touring				aghn
2-4p. Coupe	$1145			aghn
5-p. Sedan	1145	2		aghn
5-p. Sedan	1245	4		aghnu
"Great 6"				
2p. Roadster	1850	2	3645	aghnrx
5p. Touring	1850	4	3684	aghnrx
2-4p. Cab Coupe	1995	2	3700	aghnrx
4p. Foursome Sed.	2095	4	3975	aghinrtx
5p. Sedan	1995	4	3975	aghnrtx
135" W.B.				
7p. Touring	2495	4		
7p. Sedan	2850	4	4075	aghnrtx
7p. Limousine	2950	4	4075	
"Sedan 6"				
2-4p. Roadster	1350	2	2965	aghnr
5p. Touring	1295	4	2900	aghnr
2p. Coupe	1295	2	2815	aghnr
5p. Coach	1295	2	3010	aghnr
2-4p. Cab Coupe	1495	2	2880	aghnr
5p. Sedan	1495	4	3105	aghnrt

KEY TO SYMBOLS:

A—Wood wheels with spare.
a—Wood wheels.
B—Wire wheels with spare.
b—Wire wheels.
C—Optional wheels with spare.
c—Type of wheels optional.
D—Disk wheels with spare.
d—Disk wheels.
e—Front and rear bumpers.
f—Front bumper.
g—Shock absorbers or snubbers.
h—Automatic windshield wiper.
i—Trunk and trunk rack
j—Trunk rack, no trunk
k—Spare tire.
l—Spare tire lock.
m—Engine heat indicator.
n—Dash gasoline gage
o—Car heater.
p—Cigar lighter
r—Rear traffic signal.
s—Spotlight.
t—Vanity and smoking set
u—Smoking set.
v—Vanity set.
w—Windshield wings.
x—Clock.
*—Overall length
‡—Prices on application

Mechanical Specifications of Current Passenger Car Models

This list comprises current cars distributed on a national basis only. Data for previous models back to 1920 will be found in the Chilton Catalog and Directory

MAKE AND MODEL	Wheel Base (Inches)	Tire Size Decimals-Balloons	ENGINE: Make and Model	Number of Cyls. Bore and Stroke	Rated H.P. N.A.C.C.	Piston Displacement	Valve Arrangement	Camshaft Drive	Piston Material	No. Main Bear.	Crankshaft Vib'n Damper?	Oiling System	Oil Cleaner?	Cooling System	Thermostat?	Radiator Shutters?	Carburetor Make	Air Cleaner?	ELECTRICAL SYSTEM: Ignition System Make	Generator and Starter Make	Clutch—Type and Make	Gear Set—Make	Universals—Type and Make	REAR AXLE: Type and Make	Gear Ratio	BRAKES: Foot—Type and Location	Hand—Type and Location	4-Wheel Type (*=Extra)	Steering Gear—Make	Rear Springs—Type and Length	Chassis Lubrication—Type and Make
Auburn	120	28x5.25	Lyc...WS	6-2⅞x4¾	19.8	185	L	Ch..	Als..	4	Y	PG..	....	Pu..	Y	N	.....	N	D-R..	D-R..	P.Long.	War..	m-U-P..	½ Col...	4.9	I-F.	E-T	H	Ross.	S-56¾	Bijur..
Auburn	125	30x6.00	Lyc...GS	8- ⅞x4¾	26.4	247	L	Ch..	Als..	5	Y	PG..	....	Pu..	Y	N	.....	N	D-R..	D-R..	P.Long..	War..	m-U-P..	½ Col...	4.7°	I-F.	E-T	H	Ross.	S-56¾	Bijur.
Auburn	130	30x6.20	Lyc...MD	8-3¼x4½	33.8	299	L	Ch..	Als..	5	Y	PG..	F	Pu..	Y	N	.....	N	D-R..	D-R..	D.Long..	War..	m-U-P..	½ Col...	3 90	I-F.	E-T	H	Ross..	S-56¾	Bijur.
Auburn	115	31x5.25	Own.....	6-3⅛x4½	23.4	207	I	He.	C I.	4	Y	PC..	F	Pu..	Y	N	Mar..	Y	D-R..	D-R..	D.Own..	Own	m-Own.	¾ Own..	4.9°	E-F.	I-R.	M	Jac...	V-48..	Pr-Ze.
Buick	115	114½	Own.....	6-3½x4½	29 4	274	I	He.	C I.	4	Y	PC..	F	Pu..	Y	N	Mar..	Y	D-R..	D-R.	D.Own..	Own..	m-Own.	Fl Own.	4.72	E-F	I-R.	M	Jac...	V-48	Pr-Ze.
Buick	120 & 128	120–128	Own.....	6-3½x4¾																					4.9						
Cadillac	341	140	Own.....	8-3⅛x4⅛	35.1	341	L	Ch..	NI..	4	NY	PH	F	Pu..	N	Y	Own..	N	D-R..	D-R..	dp. Own.	Own..	m-Spi...	Fl. Own.	4.3°	B-F	I-R	M	Jac...	S-60..	Pr. Al.
Chandler	Big 6	124	Own..Big 6	6-3½x5	29.4	289	L	Ch..	C I.	4	Y	PH	F	Pu..	Y	N	Sch...	Y	D-R..	D-R..	P.B&B..	Own.	f-Own..	¾ Own.	4.45	E-F	E-T	M	Own..	S-59¼	Bowen
Chandler	Spec.6	109	Own.Stdd 6	3-3½ 4¼	3 4	196	L	Ch..	C I.	4	Y	PH	F	Pu.	Y	N	Sch...	Y	D-R..	D-R.	P.B&B.	Own.	f-Own...	½ Own..	4.90	E-	E T	M	Gem..	S-51	Bowen
Chandler	Royal St. 8	124	Own Roy.8	8-3¼x4¼	33 8	314	L	He..	Als..	3	Y	PC..	F	Pu..	Y	N	Car...	Y	D-R.	D-R.	P.Own..	Own	m-Own..	¾ Own	4.45	E-F	E-T	M	Own..	S-54..	Pr-Al.
Chevrolet	107	107	Own Cap	4-3⅛x4	21.8	171	I	He..	Als..	3	Y	PC..	F	Pu..	Y	N	Car...	Y	D-R.	D-R.	P.Roc...	Own	f-	½ Own..	3.82	B-F.	I-R.	N	Own..	S-53½	Pr-Ze.
Chrysler	"52"	153‡	Own.....	4-3⅝x4⅛	21.0	170	L	Ch..	Als..	4	Y	PG..	F	Pu..	Y	N	Str...	Y	D-R.	D-R.	P.B. B.	Own.	m-U-P..	½ Own.	4.70	E-R	E-T	H	Gem	S-53⅜	Pr-Ze.
Chrysler	"62"	156‡	Own.....	6-3¼x4¼	21 6	180	L	Ch..	Als..	7	Y	PG..	F	Pu..	Y	N	Str...	Y	D-R.	D-R.	P.B&B..	Own.	m-U-P..	½ Own.	4.60	E-F	E-T	H	Gem	S-57¾	Pr-Ze
Chrysler	"72"	172¾‡	Own.....	6-3¼x5	25.3	249	L	Ch..	Als..	7	Y	PG..	F	Pu..	Y	N	Str...	Y	D-R.	D-R.	P.Long..	Own..	m-U-P..	½ Own.	4.3°	E-F	E-F	H	Ross.	S-58	Pr-Ze.
Chrysler	Imperial "80"	19 ‡	Own.....	6-3⅝x5	31.5	309	L	He.	C I.	7	Y	PG..	F	Pu..	Y	N	Str...	Y	D-R.	D-R.	D.Own..	Own..	f-Spi	½ Own..	3.7°	I-F.	E-T	H	Ross.	S-58	Pr-Al.
Chrysler	V-7	132–142	Own.....V7	8-3 x4¾	45.0	442	L	Ch..	Als.	5	Y	PB..	F	Pu..	Y	N	Str...	Y	D-R.	D-R.	P.B&B.	War..	m-Mec...	Fl Tim..	4.23	I-F.	I-F.	M	Ross	S-50¼	Pr-Al.
Cunningham	9	119	Co t..148	8-3 x4¼	8 8	260	L	Ch..	C I.	5	Y	PB..	F	Pu..	Y	N	Str...	Y	D-R.	D-R.	P.B&B.	War..	m-Mec...	½ Col...	5.10	E-F.	E-T	H	Ross	S-54¼	Pr-Ze.
Davis	St. 8	125½–135	Con...122	8-3 x4¼	8 8	240	L	Ch..	Als.	5	Y	PB..	F	Pu..	Y	N	Str...	Y	N-E..	N-E.	P.Own..	Own..	m-Own..	½ Own..	4.17	E-R	I-R.	N	Gem..	S-55..	Pr. Ze.
Diana	124	116	Own...124	4-3⅞x4½	24.0	212	L	Ch..	Als..	5	N	PS..	F	Pu..	Y	N	Ste...	Y	N-E..	N-E.	P. Own.	Own..	m-Own..	½ Own.	3.76	I-F	I-F.	M	Gem..	S-54..	Pr-Ze.
Dodge Brothers	124	108	Own...124	4-3⅞x4½	24.0	212	L		Als..	7		PH		Pu.																		
Dodge Brothers	123	112	Con.....8	8-3 x4⅛	8 8	268	L	Ch..	Als..	7	N	PH	Y	Pu..	Y	N	Str...	Y	N-E..	N-E.	P. Own.	Own..	m-Own..	½ Own.	4.54	I-F	I-R.	H	Gem..	S-55..	Pr-Ze.
Dodge Bros. Victory	6	112	Con.....6	6-3¼x4½	25.3	224	L	Ch..	Als..	7	N	PH	Y	Pu..	Y	N	Str...	Y	Deleo	Deleo.	D.Long..	Col...	m-Spi...	½ Col..	4.7	E-F.	E-T	H	Ross.	S-60..	Pr-Ze.
Dodge Brothers	Senior	116	Own.....	6-3¼x5	27 3	268	I	Ch..	Als.	7	N	PH	N	Pu..	N	O	Sch...	N														
duPont	E	125	Wis. Y																													
Durant	55	107	Cont. 141	4-2¾x4¾	18.1	169	L	Ch..	Als..	4	N	PG.	F	Pu..	N	Y	Fil...	N	A-L..	A-L..	P.Own..	Own..	n.Spi...	½Own..	4.87	I-F.	I-F.	M	Own..	S-53¾	Pr-Al..
Durant	65	110	Cont. 151	4-2⅞x4¾	19.8	185	L	Ch..	Als..	4	Y	PG.	F	Pu.	Y	Y	Fil...	Y	A-L..	A-L..	P.Own..	Own..	n.Spi...	½Own	4.44	I-F	I-F.	M	Own..	S-54	Pr-Al..
Durant	75	119	Cont. 151	3½x4⅝	7.3	248	L	Ch.	C I.	4	Y	PC..	F	Pu..	Y	Y	Fil...	Y	A-L..	A-L..	P.Own..	Own..	n.Spi...	½Own	4.44	I-F	I-F.	M	Own..	S-54	Pr-Al..
Elcar	6-70	117	Lyc...WS	6-2⅞x4¾	19.8	185	L	Ch.	C I.	4	Y	PC.	F	Pu.	Y	N	Swan..	N	D-R.	D-R.	P.Long..	W-G	n-Cle	½ Sai.	4.9	E-F.	E-T	H	Ross.	S-56	Oc-...
Elcar	8-7	123	Lyc...GS	8-2⅞x4¾	26.4	247	L	Ch..	C I	5	Y	PC..	F	Pu..	Y	N	Swan..	N	D-R..	D-R.	P.Long.	W-G	m-Cle	½ Sal.	4.90	E-F.	E-T	H	Ross	S-56	Oc....
Elcar	8-82	123	Lyc...4HM	8-3¼x4½	33 8	299	L	Ch..	Als..	5	Y	PC..	F	Pu..	Y	N	Swan..	N	D-R..	D-R..	D.Long..	W-G.	m Cle	½ Sal...	4.45	E-F.	E-T	H	Gem.	S-52	Pr-Al.
Elcar	8-91 & 8-92	127–134	Lyc...4HM	8-3¼x4½	33 8	299	L	Ch..	Als..	5	Y	PC..	F	Pu..	Y	N	Swan..	N	D-R..	D-R.	P.Long..	W-G.	m-Spi...	½ Sal.	4.82	E-F.	E-T	H	Gem.	S-52	Mar—
Elcar	6	107	Cont...91	3-2¾x4½	17.3	153	L	Ch..	Al..	4	Y	PS.	F	Pu.	Y	N	Til...	N	A-L..	A-L..	P-Own..	Own.	m-Spi...	½ Tim..	4.78	I-F.	I-F.	M	Own.	S-54 ⅛	Ow...
Erskine	Super Six	110½	Own.....6	6-2⅛x4½	20.7	157	X	Ch..	Als.	6	Y	PG.	F	Pu.	Y	N	Zen...	N	A-L.	A-L..	P.B&B..	.....	m-	½	5.11	I-F.	I-R.	M	Own.	S-51¾	Pr-Al..
Essex	A	109½	Wilson....	6-2⅛x3⅜	24.0	.00	L	He.	Al.	3	Y	PB.	F	Pu.	Y	N	Str...	N	D-R.	D-R.	P.B&B..	W-G	m-Cle	½ Col...	4.89	I-F.	E-T	H	Ross.	S-54..	Pr-Ze.
Falcon-Knight	12	103½	Own.....A	4-3⅞x4¼	25.3	236	I	Ch..	Al..	3	Y	PB.	F	Air.	Y	N	ch...	N	D-R.	D-R.	P.B&B..	W-G	m-Cle	½ Col...		I-F.	E-T	H	Ross.	S-54	.....
Ford	Series 12	119-128	Own.....	6-3¼x4¾	4.4	2.6	L	Ch..	Cl..	5	Y	PH.	F	Pu..	Y	N	Sch ..	Y	D-R	D-R.	P.B&B..	W-G.	m-Cle.	½ Col		I-F.	E-T	H	Ross.	S-57	.....
Franklin	75	122	Lyc...GT	3-2¾x4¾	26.4	247	L	Ch..	Als.	7	Y	PC..	F	Pu..	Y	Y			N-E..	N-E..	dp.			½ Tim.		E-F.	E-T	H	Ross.	S-54.	.....
Gardner	85	125	Lyc...G.S.	8-2⅞x4¾	33.8	299	L	Ch..	Als..	7	Y	PH.	F	Pu..	Y	Y			N-E..	N-E..	dp			½ Tim.		E-F.	E-T	H	Ross.	S-58.	.....
Gardner	95	130	Lyc...MD	8-3¼x4½	19.8	170	L	Ch..	Als..	7	Y	PH.	F	Pu..	Y	Y			N-E..	N-E..	dp			½ Tim		I-F.	E-T	H	Ross.	S-58.	.....
Gardner	610	110½		6-2⅞ 4½	23.4	201	L	Ch..	Als..	7	Y	PG.	F	Pu..	Y	Y			N-E..	N-E..	dp			½ Tim.		I-F.	E-T	H	Ross.	S-58.	.....
Graham-Paige	614	114	Own.....	6-3⅛x4½	29.4	288	L	Ch..	Als..	7	Y	PG.	F	Pu..	Y	Y			N-E..	N-E..	dp.			½ Tim		I-F.	E-T	H	Ross.	S-58.	.....
Graham-Paige	619	119	Own.....	6-3½x5	29.4	288	L	Ch..	Als..	7	Y	PG.	F	Pu..	Y	Y			N-E..	N-E..	dp.			½ Tim.		I-F.	E-T	H	Ross.	S-58.	.....
Graham-Paige	629	129	Own.....	6-3½x5	29.4	288	L	Ch..	Als..	7	Y	PG.	F	Pu..	Y	Y			N-E..	N-E..	dp.			½ Tim.		I-F.	E-T	H	Ross.	S-58.	.....
Graham-Paige	83	135		8-3¼x4½	23 8	299	L	Ch..	Als..	5	Y	PS.	F	Pu..	Y	Y			N-E..	N-E..	dp.			½ Tim		I-F.	E-T	H	Ross.	S-58.	.....
Hudson	"O" & "S"	"118}-127⅜	Own.....6	6-3½x5	29.4	289	L	Ch..	C I.	4	Y	PC..	F	Pu..	Y	Y	Mar..	Y	N-E..	N-E..	P-Own.	Own	m-Spi...	½ Own.	4.4°	I-F	I-R.	M	Ross.	S-57 ¼	Ow...
Hupmobile	A	114	Own.....A	6-3¼x4¼	25.3	212	L	Ch..	C I.	5	Y	PF.	F	Pu..	Y	Y	Str..	Y	A-L..	A-L.	P-B&B.	Det...	m-Mec	½ Own.	4.73	B-F.	E-R	M	Ross.	S-54..	Pr-Al..
Hupmobile	M-8	120	Own.....	8-3x4½	28.8	269	L	Ch..	C I.	5	Y	PH	F	Pu..	Y	Y	Str...	Y	D-R.	D-R.	P.Long..	War..	m-Alm	½Own..	4.36	I-F.	I-F.	M	Ross.	S-57¼	Pr-Al..
Hupmobile	E-4	125	Own.....	8-3 x4¾	28.8	269	L	Ch..	Als..	5	Y	PH	F	Pu..	Y	Y	Str...	Y	Delco	A-L.	D Long.	Det.	m-U-P...	½ Own	4.9°	E-F.	E-T	H	Ross..	S-56½	Pr-Al..
Hupmobile	R	107	Own.....	8-3 x4¾	28.8	269	L	Ch..	C I.	5	Y	PH	F	Pu..	Y	Y	Str...	Y	A-L.	A-L.	P.Long.	War.	m-Spi...	½ Col	4.6	E-F.	E-T	H	Gem.	S-55½	Pr-Al..
Jordan	J-1	116	Con...12E	6-3¼x4	25.3	199	L	Ch..	Als..	5	Y	PH	F	Pu..	Y	Y	Str...	Y	A-L	A-L	P.Long..	War..	m-Alm	½ Tim..	4 4°	E-F	E-T	H	Gem.	S-55¾	Pr-Al.
Jordan	JE	116	Con...14-S	8-2⅞x4¾	26.4	247	L	Ch..	C I.	5	Y	PH	F	Pu..	Y	Y	Str...	Y	A-L	A-L	P Long.	War.	m-Alm..	½ Tim..	4 45	E-F	E-T	H	Ross	S-58	Pr-Al.
Jordan	6-70	117	Own.....0	6-2⅞x4¾	28.8	269	L	Ch..	Als.	4	Y	PH	F	Pu.	Y	Y	Str...	Y	A-L	A L	P.Long..	War.	m-Alm..	½ Col..	4.63	E-F.	E-T	H	Ross.	S-57	Pr-Al.
Kissel	8-80S	125	Own.....0	8-2⅞x4¾	19.8	185	L	Ch..	Als.	5	Y	PH	F	Pu..	Y	Y	Sch...	Y	D-R	D-R	P.B&B	W-G.	m-Mec.	½ C l	4 80	I-F	E-T	H	Ross.	S-60	Pr-Al
Kissel	8-80	125–132	Own.....80	8-2⅞x4¾	26.5	246	L	Ch..	Als..	5	Y	PG.	F	Pu..	Y	Y	Sch	Y	D-R	D-R	P.B&B	W-G	m-Mec.	½ Col...	4.6°	E-F.	E-T	H	Ross..		

KEY TO SYMBOLS

- °—Others Used
- •—At extra cost
- ‡—On Royal models only
- ½—Semi-floating
- ¼—Three-quarter floating
- Al—Aluminum
- Als—Aluminum with strut.
- B—Semi-steel
- B-F—Both internal and external, four wheels
- BO—Bevel Gear Overhead shaft
- Ch—Chain
- CI—Cast iron
- CO—Chain; Overhead shaft
- Cu—Oil and grease cups
- D—Multiple disk
- dp—Double Plate
- E—Full elliptic
- E-F—External four wheels
- E-R—External rear wheels
- E-T—External transmission
- f—Fabric
- F—Filter
- F-"F" head, intake valve-in-head exhaust valve on side.
- Fl—Full floating
- G—Head and side
- Gr—Grease cups
- H—Horizontal (valves)
- H—Hydraulic (brakes)
- He—Helical gear
- Hs—Hydrostatic
- I—In head
- I-F—Internal four wheels
- I-R—Internal rear wheels
- J—Three-quarter elliptic
- K—Cone
- L—L head
- m—Metal
- M—Mechanical
- N—None
- N—Platform (rear springs)
- N-I—Nickel Iron
- O—Optional.
- O—Special type (rear springs)
- Oc—Oil cups
- OG—Oil and Grease Cups
- Ow—Oil cups with wick feed
- P—Single plate
- Pr—Pressure gun
- PA—Pressure to mains, rods, cam shaft, wristpins
- PB—Pressure to mains, rods, timing case.
- PC—Pressure to mains, rods.
- PD—Pressure to mains, rods, wristpins.
- PE—Pressure to mains, rods, wristpins, timing case.
- PF—Pressure to mains, rods, camshaft, wristpins, timing case.
- PG—Pressure to mains, rods, camshaft, timing case.
- PH—Pressure to mains, rods, camshaft.
- PS—Splash with pressure
- Pu—Pump
- Q—Quarter elliptic
- R—Rectifier
- S—Semi-elliptic
- Se—Servo
- Sep—Separate
- Sp—Spur gear (camshaft drive.
- Spe—Special make
- Sta—Standard
- T—T head
- Th—Thermo-syphon
- Tr—Transverse "X" Shape
- V—Cantilever
- Var—Varies
- X—Sleeve valve
- Y—Yes

ABBREVIATIONS—NAMES OF MFRS. OF STOCK PARTS

- A-Bos—American-Bosch
- A-W—Atwater Kent
- A-L—Auto-Lite
- Ada—Adams
- Al—Alemite
- Alm—Almetal
- B&B—Borg & Beck
- Bal—Ball & Ball
- B-L—Brown-Lipe
- Ba—Bassic cups
- Car—Carter
- CAS—CAS Products
- Cle—Cleveland
- Con—Continental
- Col—Columbia
- Cpl—Campbell
- Da—Dawson
- DeJo—DeJon
- Det—Detroit
- Do—Dot
- D-R—Delco-Remy
- Dur—Durston
- Dyn—Owen Dyneto
- Eat—Eaton
- Gem—Gemmer
- G&H—Guay & Haigh
- Hol—Holley
- Jac—Jacox
- Joh—Johnson
- Lyc—Lycoming
- Mar—Marvel
- Mec—Mechanics Machine
- Mun—Muncie
- N-E—North East
- Pet—Peters
- Roc—Rockford
- Sa—Saal
- Sal—Salisbury
- Sch—Schebler
- Sne—Snead
- Spe—Special Make
- Spi—Spicer
- Ste—Stewart
- Str—Stromberg
- Thr—Thermoid
- Til—Tillotson
- Tim—Timken
- U-M—Universal Machine
- U-P—Universal Products
- W-G—Warner Gear
- Wag—Wagner
- War—Warner
- Wes—Westinghouse
- W-M—Willys-Morrow
- Wis—Wisconsin
- Ze—Zerk
- Zen—Zenith

Ex-ternal or *In*-ternal-

LOCKHEED-HYDRAULIC

Four-Wheel Brakes are Best

OVER a period of years, continuous test and comparison have satisfied us completely that application of braking power transmitted through the hydraulic principle is best, *no matter what the form of brake.*

This superiority is due, of course, to the fact that the hydraulic principle assures that braking pressure is always exerted *equally* on each of the four braking mechanisms at the wheels.

Whether the brakes are external or internal, they are far superior when the means of actuation is based upon the hydraulic principle as perfected in application by Lockheed.

HYDRAULIC BRAKE COMPANY
Detroit, Michigan, U.S.A.

Mechanical Specifications of Current Passenger Car Models—Continued

MAKE AND MODEL	Wheel Base (Inches)	Tire Size Decimals-Balloons	ENGINE: Make and Model	Number of Cyls., Bore and Stroke	Rated H.P. N.A.C.C.	Piston Displacement	Valve Arrangement	Camshaft Drive	Piston Material	No. Main Bear.	Crankshaft Vib'n Damper?	Oiling System	Oil Cleaner?	Cooling System	Thermostat?	Radiator Shutters?	Carburetor Make	Air Cleaner?	ELECTRICAL SYSTEM: Ignition System Make	Generator and Starter Make	Clutch—Type and Make	Gear Set—Make	Universals—Type and Make	REAR AXLE: Type and Make	Gear Ratio	BRAKES: Foot—Type and Location	Hand—Type and Location	4 Wheel Type (*=Extra)	Steering Gear—Make	Rear Springs—Type and Length	Chassis Lubrication—Type and Make
Kissel.....8-90	131–139	30x6.75	Own....90	8-3⅛x4½	32.6	288	L	Ch..	Als..	5	Y	PA..	Y	Pu..	Y	N	Sch...	Y	D-R..	D-R..	P.B&B..	W-G..	m-Mec..	½ Tim..	4.89	E-F.	E-T	H	Ross..	S-60..	Pr-Al.
La Salle.....	125–134	32x6.00°	Own.....	8-3⅛x4⅛	31.2	303	L	Ch..	NI..	3	N	PH.	Y	Pu..	N	Y	Own..	N	D-R.	D-R..	dp.Own..	Own..	m-Spi...	Fl Tim.	4.58	I-F	E-R	M	Own..	S-60..	Pr-Al.
Lincoln.....	136	32x6 75	Own.....8	8-3½x5	39.2	385	L	Ch.	Al..	5	N	PH.	Y	Pu..	Y	Y	Str...	Y	Delco.	Delco.	D.Own..	Own..	m-Spi...	Fl Tim.	4.58	I-F	E-R	M	Own..	S-60..	Pr-Al.
Locomobile.....8-70	122	31x6.00	Cont..Spe.	8-2⅞x4¾	26.4	247	L	Ch..	Al..	5	Y	PH.	Y	Pu..	N	N	Sch...	Y	D-R..	D-R..	P.B&B..	Det...	m-Spi...	½ Ada..	4 77	I-F	I-R.	M	Ross..	S-58..	Pr-Ze.
Locomobile.....8-80	130	32x6.00	Lyc Spe...	8-3¼x4½	33.8	299	L	Ch..	Al..	5	Y	PC.	F	Pu..	Y	N	Sch...	Y	DeJo..	DeJo..	P.B&B..	War...	m-Spi...	½ Sal..	4.81	I-F.	I-R.	M	Ross..	S-58..	Pr-Ze.
Locomobile.....48	142	33x6.75	Own....48	6-4½x5½	48.6	525	T	He..	C I.	7	Y	PA..	F	Pu..	Y	N	Bal...	N	D-R..	Wes..	P.Own..	Own..	m-Spi...	Fl Own..	3.50	B-F.	I-R.	M	Ross	J-50...	Pr-Ze.
Locomobile.....“90”	138	33x6.75	Own....90	6-3⅞x5¼	36.0	372	L	Ch..	C I.	7	Y	PA..	F	Pu..	Y	N	Str...	Y	DeJo..	DeJo..	P.Own..	Own..	m-Spi...	½ Eat..	4.5°	I-F.	I-R.	M	Ross..	S-60..	Pr-Ze.
Marmon.....68	114	29x5.25	Own.....	8-2¾x4¼	24.2	202	L	Ch.	Al..	5	Y	PG.	N	Pu..	Y	N	Str....	N	D-R..	D-R.	P.....	.....	m.Spi...	½Own..	4.90	I-F.	I-F.	M	Ross..	S-56⅜	Pr-Ze.
Marmon.....78	120	29x5.50	Own.....	8-2⅛x4	27.6	217	I	Ch..	Als..	5	Y	PH.	F	Pu..	Y	N	Sch...	N	D-R..	D-R..	P.....	.....	m-Spi...	½	4.90	I-F.	I-F.	M	Ross	S-56⅜	.....
Marmon.....E-75	136	32x6.75	Own..E-75	6-3⅝x5½	33.8	340	I	He..	C I.	3	Y	PA..	Y	Pu..	N	N	Sch...	N	D-R	D-R.	P.B&B..	W-G..	m-Spi...	¾ Own..	Var	I-F.	I-R.	M	Gem.	Tr-45	Bowen
Marmon.....E-75	136	32x6.75	Own..E-75	6-3⅝x5½	33.8	340	I	He..	C I.	3	Y	PA..	Y	Pu..	N	N	Sch...	N	D-R	D-R.	P.B&B.	W-G..	n-Uni..	½ Tim..	5.10	E-F	E-T	H	Ross.	S-58½	Bowen
McFarlan.....St. 8	131–136	33x6.20	Lyc...4H	3-3¼x4½	33 8	299	L	Ch..	Als..	5	Y	PA..	N	Pu..	Y	....	Sch...	N	DeJo.	DeJo.	P.B&B..	B-L..	mf-Cle..	Fl Tim..	3.53	E-F.	I-R.	H	Ross.	S-64..	Bowen
McFarlan.....TV6	141	33x6.75	Own...TV	6-4½x6	48 6	573	T	He	Al...	4	N	PA..	N	Pu	N	....	Sch...	N	DeJo.	DeJo.	P.B&B..	W-G..	m-Spi...	½ Col..	4.90	E-F.	E-T	H	Ross..	S-54	Pr-Al.
Moon.....Series A	113	30x5.25	Con....7Z	6-3⅛x4½	23.4	196	L	Ch..	C I.	4	N	PC.	Y	Pu..	Y	N	Str....	Y§	D-R..	D-R..	P.B&B..	W-G..	m-Spi...	½ Col..	4.89	E-F.	E-T	H	Ross..	S-54..	Pr-Al.
Moon.....6-60	110	29x4.75	Con...26L	6-2⅞x4¾	19 8	185	L	Ch..	CI..	4	N	PC.	F§	Pu.	Y§	N	Car...	Y§	D-R..	D-R..	P.B&B..	W-G..	m-Spi...	½ Col..	4.89	E-F.	E-T	H	Ross..	S-54..	Pr-Al.
Moon.....6-72	120	29x5.50	Cont.....	6-3⅜x4	27.3	215	L	Ch..	Als..	7	Y	PH.	F	Pu.	Y	Y	Str...	Y	D-R..	D-R..	P.B&B..	W-G.	m-Spi...	½ Col..	4.9	E-F.	E T	H	Ross.	S-54	Pr....
Moon.....8-80	125	31x6.20	Cont...15S	8-3⅛x4¾	28.8	269	L	Ch..	Als..	5	Y	PA.	Y	Pu..	Y	....	Str....	Y	D-R..	D-R..	P.B&B..	W-G.	.....	½Col..	4.63	E-F.	E-T	H	Ross.	S-54	Pr....
Nash.....Std. Six	108¼	30x5.00	Own...321	6-3½x4	23 4	184	L	He.	C I.	7	Y	PA..	Y	Pu..	Y	N	Car...	Y	A-L..	A-L..	P.B&B..	Own.	f-Own...	½ Own.	4.77	B-F.	E-R	M	Ross.	S-50½	Pr-Al.
Nash.....Advanced	121–127	32x6.00	Own...331	6-3½x5	28.4	279	I	He..	C I.	7	N	PH.	Y	Pu..	Y	N	Mar...	Y	D-R..	D-R..	P.B&B..	Own.	m-Own..	½ Own.	4.50	B-F.	E-T	M	Gem.	S-56½	Pr-Al.
Nash.....Special	112¾	30x5.25	Own...331	6-3¼x4½	25 3	224	I	He..	C I.	7	Y	PH.	Y	Pu.	Y	N	Mar.	Y	D-R..	D-R..	P. Own..	Mun..	m-Mec.	½ Own.	4.88	B-F.	E-T	M	Gem.	S-54	Pr-Al.
Oakland.....AA-6	117	29x5.50	Own...AA6	6-3¼x4½	25.3	212	L	Ch..	B...	4	Y	PH.	F	Pu.	Y	N	Mar.	Y	D-R..	D-R..	P. Own..	Mun..	m-Mec.	½ Own.	4.42	E-F.	E-T	M	Jac...	S-54½	Pr-Al°
Oldsmobile.....6	113½	28x5.25	Own.....	6-3⅜x4½	24.4	197	L	Ch..	CI..	4	N	PC..	F	Pu..	....	N	Sch...	Y	D-R..	D-R..	P.B&B..	Own.	fm-U-P..	½Own..	4 81	B-F.	F-R	M	Jac...	S-54½	.....
Overland.....(4) Whippet	100¼	28x4.75	Own....96	4-3⅛x4⅜	15.6	134	L	Ch.	C I.	3	N	PH.	N	Pu..	N	N	Til....	N	A-L..	A-L..	P.B&B..	Own.	m-Mec.	½ Own..	4.89	I-F.	I-R.	M	Own..	S-49..	Pr-Al..
Packard.....526	126	32x6.00	Own.....6	6-3½x5	29.4	289	L	Ch..	Als..	7	N	PF.	N	Pu..	Y	N	Own..	N	Delco	Dyn..	D.Own..	Own..	m-Mec..	½ Own..	4.67	I-F.	I-R.	M	Own..	S-56..	Bijur
Packard.....533	133	32x6.75	Own.....6	6-3½x5	29.4	289	L	Ch..	Als..	7	N	PF.	N	Pu..	Y	N	Own..	N	Delco	Dyn	D. Own.	Own..	m-Mec..	½ Own.	4.67	I-F	I-R.	M	Own..	S-56..	Bijur
Packard.....443	143	32x6.75	Own.....8	8-3½x5	39.2	385	L	Ch..	Als..	9	Y	PF.	N	Pu..	Y	Y	Own..	N	Delco	Dyn.	D.Own..	Own..	m-Mec..	½ Own..	4.33	I-F.	I-R.	M	Own.	S-56..	Bijur
Peerless.....6-60	116	29x5.25	Con ..10E	6-3¼x4	25.3	199	L	Ch..	Als..	7	N	PH.	F	Pu..	N	....	Str....	Y	A-L...	A-L...	P.B&B..	.....	m-.....	½ Col..	4 44	E-F	E-T	H	Ross..	S-54¼	Pr-Al..
Peerless.....6-80	116	32x6.00	Con....8U	6-3¼x4⅜	25.3	230	L	Ch..	Als..	7	Y	PH.	N	Pu..	N	Y	Str....	Y	A-L...	A-L...	P.B&B..	Det...	m-Spi...	½ Col..	4.4°	E-F	E-T	H	Ross..	S-54..	Pr-Al..
Peerless.....8-69	126–133½	33x6.20	Own....69	8-3¼x5	33.8	342	L	He.	C I.	3	N	PH.	F	Pu.	N	Y	Str....	Y	Delco	Delco.	P. B&B..	Own..	m-Spi...	½ Eat..	4.42	E-F.	I-R.	H	Ross.	S-56..	Pr-Al..
Peerless.....6-9	120	32x6.00	Own....90	6-3½x5	29.4	289	L	Ch..	Als..	7	N	PH.	F	Pu..	N	Y	Str..	Y	A-L...	A-L...	P. B&B..	Det...	m-Spi...	½ Col..	4.4°	E-F.	E-T	H	Ross..	S-54..	Pr-Al..
Pierce Arrow.....36	138	33x6.75	Own... 36	5-4 x5½	38.4	415	T	He..	CI..	7	Y	PA..	Y	Pu..	Y	Y	Own..	N	Delco	Delco.	D.Own..	Own.	m-Spi...	½ Own.	4.29	I-F	I-R.	M	Gem..	S-56½	Bowen
Pierce Arrow..... 81	130	32x6.00	Own... 81	6-3½x5	29.4	289	L	Ch..	Als..	7	N	PA..	Y	Pu..	Y	Y	Str....	N	Delco	Delco.	P. B&B.	B-L..	m-Spi...	½ Tim..	4.45	I-F.	I-R.	M	Gem..	S-56½	Pr-Ze..
Pontiac.....Six	110	29x4.75	Own..6-27	6-3¼x3¾	25.3	187	L	Ch..	B...	3	N	PC..	N	Pu..	Y	N	Car...	N	D-R..	D-R..	P.Own.	Own.	m-Own	½ Own.	4.18	B-F.	I-R.	M	Jac...	S-54..	Pr-Ze..
Reo.....Wolverine	115	28x5.25°	Cont..15E	6-3¼x4	25.2	199	L	Ch..	Als..	7	Y	PH.	N	Pu..	Y	N	Sch...	N	N-E..	N-E..	P.B&B..	W-G..	m.Det..	½ Sal ..	4.45	I-F.	E-T	H	Ross..	S-55..	Pr.Ze.
Reo.....Flying Cloud	121	30x6.20	Own ..A	6-3¼x5	25.2	249	L	Ch..	Als..	7	Y	PH.	Y	Pu..	Y	N	Sch...	Y	D-R..	D-R..	P.Long..	Own	m-Det..	½ Own..	4.5°	I-F.	E T	H	Ross..	S-55..	Pr-Ze.
Roamer.....8-78	120	32x6 00	Lyc...GT	3-2¾x4¾	24.2	226	L	Ch..	C I.	5	Y	PC.	N	Pu..	N	N	Sch...	N	A-L..	A-L..	P.B&B..	W-G..	m-Mec..	½ Sal..	4.45	E-F	E-T	H	Ross..	S-57½	Pr....
Roamer.....8-80	126	32x6.00	Lyc..4HM	8-3¼x4½	33.8	299	L	Ch..	CI..	5	Y	PC	N	Pu..	N	N	Sch...	N	A-L..	A-L..	P.B&B..	.....	m-Mec	½ Sal..	4.45	E-F	E-T	H	Ross..	S-57½	Pr....
Roamer.....8-88	136	32x6.20	Lyc... 4H	8-3¼x4½	33 8	299	L	Ch..	C I.	5	Y	PC.	N	Pu .	N	N	Sch...	N	A-L..	A-L..	P.B&B..	W-G..	m-Mec..	½ Sal..	4.64	E-F.	E-T	H	Ross..	S-60	Pr....
Rolls Royce...Silver Ghost	143½	33x6.75	Own.40–50	6-4½x4¾	48 6	454	L	He..	Al..	7	Y	PD.	N	Pu..	N	Y	Own..	N	Bosch.	Wes..	h Own..	Own	m-Own..	Fl Own..	3.71	I-R.	I-R.	N	Own	V-54½	Pr-Al.
Rolls Royce. New Phantom	143½ 146½	33x6.75	Own.40–65	6-4¼x5½	43.3	468	I	He..	Al..	7	Y	PE.	Y	Pu.	N	Y	Own.	Y	DeJo..	Own..	P.Own..	Own..	m-Own..	Fl. Own	3.71	I-F.	I-R.	M	Own..	V-54½	Bijur..
Star.....4	107	29x4.40	Con ..W-5	4-3⅜x4¼	18.2	152	L	Ch..	Als..	3	N	PE..	N	Pu.	N	N	Til....	N	A-L...	A-L ..	P.Own..	Own..	m-Spi...	½ Own..	4.87	I-F.	I-F.	M	Own..	S-57½	Pr-Al.
Stearns Knight.... F 6-85	137¼	32x6.75	Own.F 6-85	6-3½x5	29 4	298	X	Ch..	C I.	7	N	PC..	Y	Pu..	N	N	Til....	Y	DeJo..	DeJo.	P.B&B	Own..	m-Spi...	½ Tim..	5.0	I-F.	I-R.	M	Ross..	S-62..	Pr-Al..
Stearns Knight.. H & 8-35	137–145	32x6.75	Own.....H	8-3½x5	39.2	385	X	Ch..	CI..	9	N	PE..	Y	Pu..	N	N	Til....	Y	DeJo..	DeJo.	dp. Long	Own..	m-Spi...	½ Tim..	4.5	I-F.	I-R.	M	Gem..	S-62..	Pr-Al..
Studebaker.....Dictator	113	31x5.25	Own.....	6-3⅜x4½	27 3	242	L	Ch.	C I.	4	Y	PH.	F	Pu..	Y	N	Str....	N	D-R..	D-R..	P.Long..	Own..	m-Spi...	½ Own..	4.18	B-F.	E-T	M	Own.	S-50½	Pr-Ze.
Studebaker....Commander	120	31x5.25	Own.....	6-3⅜x5	36 0	354	L	He.	C I.	4	Y	PH.	F	Pu..	Y	N	Str	N	D-R..	D-R..	P.Long..	Own..	m-Spi...	½ Own.	3.31	B-F.	E-T	M	Own.	S-50½	Pr-Ze.
Studebaker.. ... Pres. 8	131	31x6.20	Own.....	8-3⅝x4⅜	36.4	313	L	He..	Als..	5	N	PH.	F	Pu..	Y	N	Sch...	N	D-R..	D-R..	P.Long..	Own..	m-Spi...	½Own..	4.1°	I-F.	E-T	M	Ross.	S-60	Pr-Ze.
Stutz.....BB	131 145	32x6.20 32x6.75	Own.....	8-3¼x4½	33.8	299	I	CO.	C I. Als*	9	N	P F.	F	Pu..	Y	N	Zen...	Y	D-R..	D-R..	P.B&B..	Det...	m-Mec.	½ Tim..	5.0	I-F.	E-T	H	Ross.	S-62..	Myers
Velie.....Std. 50	112	30x5.25	Own....54	6-3⅛x4¼	23.4	196	I	He.	C I.	4	Y	PH.	N	Th..	N	N	Str....	N	A-L..	A-L..	P.B&B..	W-G..	m-Cle..	½ Own..	4.90	I-F.	E-T	H	Ross..	S-55...	Pr-Ze.
Velie.....6-66	112	30x5.25	Own.....	6-3⅛x4¼	24.4	203	I	He..	CI..	4	Y	PF..	....	Th..	....	....	Str....	...	A-L...	A-L...	P.....	.....	m-Cle...	½Own..	4.9	I-F.	E-T	H	Ross.	S-55	.....
Velie.....6 77	118	32x6.00	Own....52	6-3 4x4⅝	24 4	221	I	He..	C I.	4	N	PH.	Y	Th..	N	N	Str....	N	D-R..	D-R..	P.B&B..	Mec...	m-Cle...	½ Own.	4.90	I-F.	E-T	H	Ross.	S-55..	Pr-Ze.
Velie.....8-85	125	32x6.20	Lyc.....	8-3¼x4½	33.8	299	L	Ch..	Als..	5	....	PH.	F	Pu..	N	N	Sch...	N	D-R..	D-R..	P.B&B..	Mec..	m-Cle...	½ Own.	4.6	I-F	E-T	H	Ross.	S-55..	Pr-Ze.
Willys-Knight..... Std. 6	109½	.9x5.50	Own.....	6-2 4x3½	20.7	153	X	Ch.	Als..	7	....	PH.	Y	Pu..	Y	N	Til....	Y	A-L...	A-L..	P.B&B..	Own.	m-Mec..	½Own..	5.11	B-F.	E-R	M	Own.	S-51¾	Pr-Al.
Willys Knight.....Great 6	126-135	32x6.00	Own..66-A	6-3⅜x4¾	27.3	255	X	Ch..	Als..	7	N	PA..	R	Pu..	Y	N	Til....	Y	A-L...	A-L..	P.B&B..	Own..	m-Mec	¼ Own..	5.11	B-F.	I-R.	M	Cwn.	S-63⅜	Pr-Al
Willys Knight.....Spec. 6	113¾	31x6.00	Own..70-A	6-2⅛x4¾	20.7	178	X	Ch..	Als..	7	N	PH.	R	Pu..	Y	N	Til....	Y	A-L...	A-L..	P.B&B..	Own..	m-Mec..	½ Own.	5.11	B-F.	E T	M	Own	S-55¼	Pr-Al.

KEY TO SYMBOLS

•—Others Furnished
•—At extra cost
‡—Overall Length
¼—Semi-floating
¾—Three-quarter floating
Al—Aluminum
Als—Aluminum with strut.
S—Semi-steel
B-F—Both internal and external, four wheels

BO—Bevel Gear Overhead shaft
Ch—Chain
CI—Cast Iron
CO—Chain; Overhead shaft
Cu—Oil and grease cups
D—Multiple disk
dp—Double Plate
E—Full elliptic
E-F—External four wheels
E-R—External rear wheels
E-T—External transmission

f—Fabric
F—Filter
F-“F” head, intake valve-in-head exhaust valve on side.
Fl—Full floating
G—Head and side
Gr—Grease cups
H—Horizontal (valves)
H—Hydraulic (brakes)
He—Helical gear
HS—Hydrostatic

I—In head
I-F—Internal four wheels
I-R—Internal rear wheels
J—Three-quarter elliptic
K—Cone
L—L head
m—Metal
M—Mechanical
N—None
N—Platform (rear springs)
NI—Nickel Iron

O—Optional
O—Special type (rear springs)
Oc—Oil cups
OG—Oil and Grease Cups
Ow—Oil cups with wick feed
P—Single plate
Pr—Pressure gun
PA—Pressure to mains, rods, camshaft, wristpins.
PB—Pressure to mains, rods, timing case.

PC—Pressure to mains, rods.
PD—Pressure to mains, rods, wristpins.
PE—Pressure to mains, rods, wristpins, timing case.
PF—Pressure to mains, rods, camshaft, wristpins, timing case.
PG—Pressure to mains, rods, camshaft, timing case.
PH—Pressure to mains, rods, camshaft.

PS—Splash with pressure
Pu—Pump
Q—Quarter elliptic
R—Rectifier
S—Semi-elliptic
Se—Servo
Sep—Separate
Sp—Spur gear (camshaft drive)
Spe—Special make
Sta—Standard

T—T head
Th—Thermo-syphon
Tr—Transverse “X” shape
V—Cantilever
Var—Varies
X—Sleeve valve
Y—Yes

ABBREVIATIONS—NAMES OF MFRS. OF STOCK PARTS

A.Bos—American Bosch
Ada—Adams
A-K—Atwater Kent
A-L—Auto-Lite
Al—Alemite
Alm—Almetal
B&B—Borg & Beck
B-L—Brown-Lipe
Bal—Ball & Ball
Ba—Bassic cups
Car—Carter
CAS—CAS Products
Cle—Cleveland
Col—Columbia
Con—Continental
Cpl—Campbell
Da—Dawson
DeJo—DeJon
Det—Detroit
De—Dot
D-R—Delco-Remy
Dur—Durston
Dyn—Owen Dyneto
Eat—Eaton
Gem—Gemmer
G & H—Guay & Halgh
Hol—Holley
Jac—Jacox
Joh—Johnson
Lyc—Lycoming
Mar—Marvel
Mec—Mechanics Machine
Mun—Muncie
N-E—North East
Pet—Peters
Roc—Rockford
Sa—Saal
Sal—Salisbury
Sch—Schebler
Sne—Snead
Spe—Special Make
Spi—Spicer
Ste—Stewart
Str—Stromberg
Thr—Thermold
Til—Tillotson
Tim—Timken
U-M—Universal Machine
U-P—Universal Products
W-G—Warner Gear
Wag—Wagner
War—Warner
Wes—Westinghouse
W-M—Willys-Morrow
Wis—Wisconsin
Ze—Zerk
Zen—Zenith

A Factory Franchise written from A Dealer Angle

Studebaker executives view Studebaker-Erskine models from the standpoint of public approval and salability

America's most

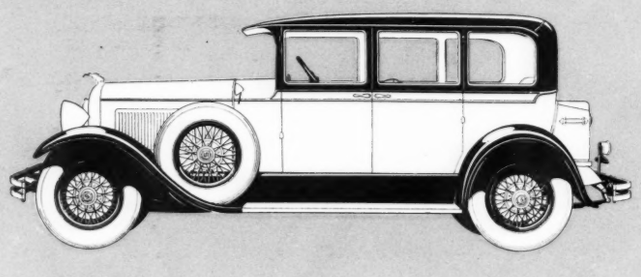
A. R. ERSKINE
President

Every Studebaker factory executive is "dealer-minded." These men view the selling of Studebakers from the dealer's side of the desk. They know the range of public demand—today. And consequently, Studebaker-Erskine dealers are offered four complete lines of fine-quality cars ranging from $795 to $2250. The opening wedge is the new American Edition of the Erskine Six—a bigger, roomier, more powerful car at a new low price of $795. And at the top of the line are the State models of the new President Eight at $2250—*the* "eight" of 1928! Studebaker dealers are thus able to supply a market as large as popular demand. They have profitable merchandise to sell in every price class.

President Erskine believes that the success of any factory depends on the ability of its dealers to make money. He has pioneered many policies protecting dealers against loss—in case of price reduction, termination of contract, etc. He has developed the resources of Studebaker until Studebaker production today is on the most economical basis in the fine-car field. Studebaker dealers are thus assured of the highest quality and value at a low, One-Profit price.

Paul G. Hoffman, vice-president in charge of sales and advertising, holds his job because he was a brilliantly successful Studebaker dealer. When dealers take their problems up with Paul Hoffman, they are talking to one of their own kind. He thinks as a dealer thinks. He protects his dealers' interests. He understands their problems because he has faced them himself on the floor of Studebaker showrooms.

$1985



Studebaker's New President Eight 100 Horsepower $1985

This new President will take its place immediately as an outstanding achievement of automotive engineering. 100-horsepower motor—capable of a speed of 80 miles an hour with effortless smoothness.

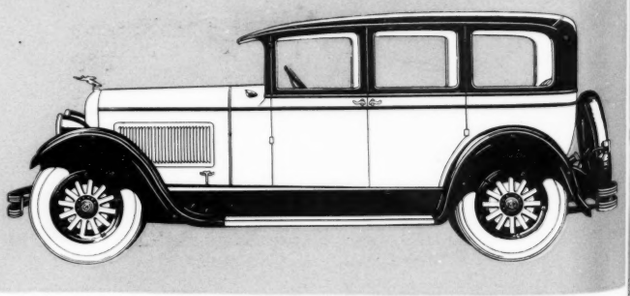
Richly finished and appointed—fashionable body lines—no handsomer car ever skimmed the boulevards. The outstanding 8-cylinder value of 1928—leader in the fine-car field at its remarkable One-Profit price of $1985 to $2250, f. o. b. factory. The car illustrated at the left is the State Sedan, price $2250, f. o. b. factory.

Studebaker Commander —World's Champion Car

Holder of every official endurance and speed record for fully equipped stock cars, regardless of power or price. Nothing on earth or in the sky ever equaled The Commander's recent record of traveling 25,000 miles in less than 23,000 minutes.

Body lines, finish, equipment and appointments befitting its World's Champion performance. A beautiful car, judged by the highest standards. Champion of the 6-cylinder field, in value as well as performance—$1495 to $1745 f. o. b. factory.

$1495



friendly factory

H. S. Vance, vice-president in charge of production, is a former sales manager of Studebaker, and consequently Studebaker production is based on a sales viewpoint. Mr. Vance looks on each new Studebaker model first in terms of its appeal to the buying public. His engineering department is the finest in the industry. Its head, D. G. Roos, formerly chief of engineering of Pierce-Arrow, Locomobile and Marmon, is an engineer of national repute.

Research is under the direction of W. S. James, formerly head of an important section of the Bureau of Standards at Washington, D. C. Mr. Vance, Mr. Roos and Mr. James, with their associates, have developed Studebaker's famous Commander, World's Champion car and all other Studebaker-Erskine models. These are popular cars because they have been developed to meet the public demand in their various classes—supreme values at low, One-Profit prices.

New Contract for Towns and Villages

For small communities we offer a new and unusual contract which enables any good salesman to go into the automobile business as a dealer. Hardly any capital is necessary. No shop need be operated. No used cars need be handled. No commitments need be made to purchase any particular number of cars.

The valuable Studebaker-Erskine franchise may be open in your territory, or it may be subject to change. Wire or write for information direct to Department 51, *The Studebaker Corporation of America, South Bend, Indiana.*

PAUL G. HOFFMAN
Vice-President

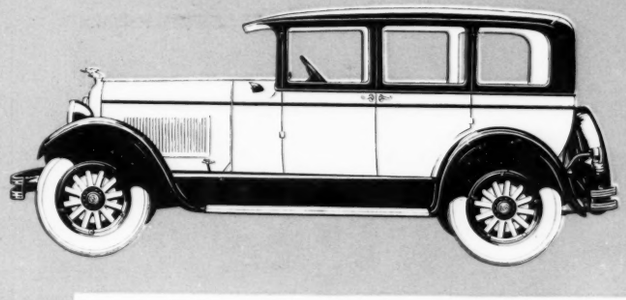
HAROLD S. VANCE
Vice-President

The New American Edition of Studebaker's Erskine Six

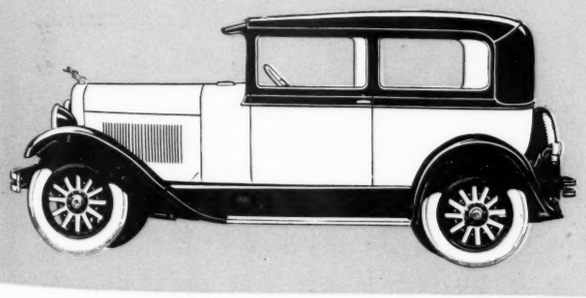
Now an Erskine Six built to American standards. Bigger! Roomier! More powerful! More brilliant in performance. Beautiful! Luxurious! Fashionable!

The new Erskine engine gives a smooth, even 60-mile speed without effort—the greatest performing engine of any car under $1000—conclusively proved by a recent 24-hour run in which better than 54 m.p.h. average was maintained. Priced to fit any purse—$795 to $965 f. o. b. factory.

$1195



$795



Studebaker Dictator —Champion of Its Class

A stock model of the Dictator Sedan recently traveled 1,483 miles in a 24-hour race against time—better than mile-a-minute speed for 24 consecutive hours. No car under $1400 has ever equaled this record, which was made under the supervision of the A. A. A.

Designed and finished in custom taste and luxury, The Dictator is available in seven body types—all equipped with shock absorbers, all offering superlative performance and beauty—and super values at $1165 to $1345, f. o. b. factory.

11 Reasons

Why Studebaker enables you to offer the biggest values in your community

1 Because Studebaker is the *second* largest *independent* automobile manufacturer in the world, with $105,000,000 in actual net assets.

2 Because Studebaker's manufacturing plants, unrivaled research laboratories and engineering departments, and $1,000,000 Proving Ground enable Studebaker to design and produce automobiles as *economically* as any manufacturer in the world and decidedly more economically than all but a few.

3 Because *all* of Studebaker's principal officers, executives and engineers live together in South Bend and are in daily contact with each other.

4 Because Studebaker's overhead, commercial and financial organization and expenses are reduced to the minimum and are lower per car than the heavy overhead expenses of many manufacturers.

5 Because Studebaker's purchase of materials, accessories and supplies are made in the open competitive markets.

6 Because Studebaker's capital stock structure is lower per dollar of assets, and its $5.00 dividend charges are light burdens upon the corporation's treasury.

7 Because Studebaker never makes an abnormal profit of from 15% to 20% of the public's dollar, but has been satisfied with an average of 10.6% net profits for the past sixteen years.

8 Because Studebaker is the oldest manufacturer of vehicles in the United States.

9 Because 1,000,000 Studebaker cars have been made and sold in the past 10 years.

10 Because Studebaker has the trained engineering organization, the unexcelled plants, the working capital and the selling organization necessary (1) to design cars correctly, (2) to manufacture them economically, (3) to finance the business, and (4) to sell economically. In such respects it is surpassed by only one *individual* manufacturer, the largest in the automobile industry.

11 Because the name Studebaker stands for the highest ideals of American industry and is known and respected in every civilized country on the globe.

THE STUDEBAKER CORPORATION OF AMERICA
Department 51
SOUTH BEND, INDIANA

Please send me full information on the Studebaker-Erskine franchise.

Name_____

Street address_____

City and State_____

My present business (if selling cars now, state make)_____

Mail This Coupon Today

It will bring you full information on the Studebaker-Erskine franchise—it will show you the road to independent success.

BANG!

When two cars bump at the crossing, with smashing glass, bent fenders, etc., the crowd that immediately collects represents *no particular group of people.* It includes bankers, brokers, grocer boys, bootleggers, candle stick makers, *et al.*

But with your dealer message appearing in the trade's principal newspaper (edited for 25,000 trade units, comprising the industry's real merchandising effectives), the circulation is *really effective*—with waste comparable to that fractional percentage of impurity that the makers of Ivory soap claim for their product.

Have you noted the recent changes in MOTOR AGE, which are giving it an odds-on advantage in the automotive news field? MOTOR AGE is getting a lot of favorable reaction from its subscribers—reaction that spells increasing value to those manufacturers who use its advertising pages.

MOTOR AGE *circulation is* paid. *Except for* AUTOMOBILE TRADE JOURNAL, *which has a fractional advantage, the percentage of voluntary subscription renewal is the highest of any automotive publication. A charter member of the A.B.C. An advertising vehicle that will carry your dealer message the whole distance.*

If you are interested in a market analysis to determine, in a practical manner, just how your product can best be merchandised via automotive trade channels, we will be glad to place our unusual research facilities at your service.

MOTOR AGE

A Chilton Class Journal Publication

CHESTNUT and 56th STREETS, PHILADELPHIA

The Wholesale Yard Stick

The following facts on automotive marketing are a definite and safe guide for any concern that is distributing via wholesale channels.

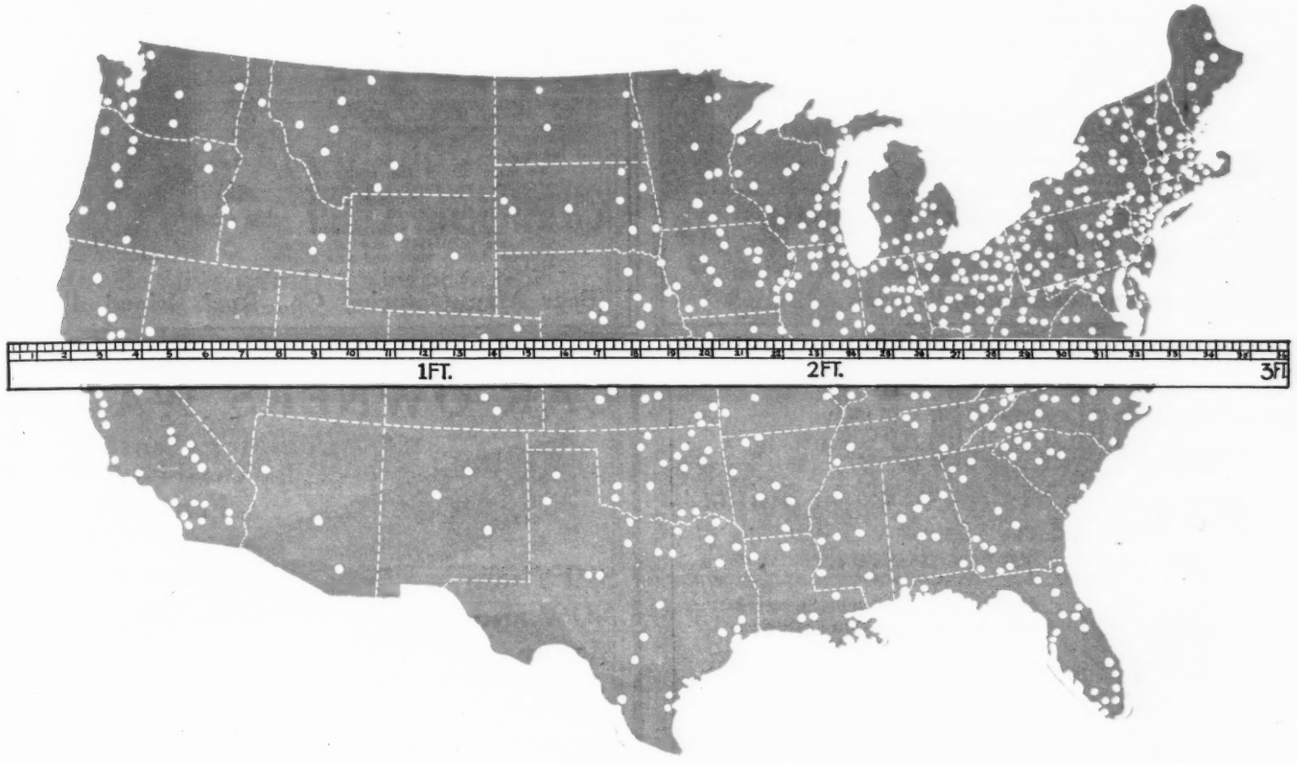
On the opposite page is a map whereon we indicate *six hundred and forty-three* First, Second and Third line automotive wholesaling centers in the United States. This presentation is the result of nation-wide surveys conducted by the Motor & Accessory Manufacturers Association and other marketing organizations—augmented by our own research investigations.

Where 60% of the manufacturers use a specific city for wholesale distribution it is considered a First line city. If 40% use a city it becomes a Second line point. If used by less than 40% of the manufacturers it falls into the Third line classification.

More intensity of merchandising method, hand-to-mouth buying, and increasing density of car population, are responsible for the ever widening scope of the wholesale market.

In a recently published 48 page book we make a complete analysis of the market, by States. It presents all wholesaling cities — gives the number of car agencies, repair shops, the populations, etc.

A copy will be forwarded, with our compliments, to any automotive manufacturer, or advertising agency account executive, who will make request.



Come to Automotive Headquarters

If you want better sales coverage — wholesale and retail — we can help you.

If you have need for market analysis, the exceptional facilities of our Research Department are at your instant disposal.

We will be glad to show how your advertising dollar will go the greatest distance in accomplishing merchandising results.

We know the industry. We know the trade. We know dealers—and how to fit them into your marketing operations.

CHILTON CLASS JOURNAL COMPANY

Publishers of Automotive Business Papers

Chestnut and 56th Sts., Philadelphia

AUTOMOBILE TRADE JOURNAL
MOTOR AGE
AUTOMOTIVE INDUSTRIES
AUTOMOTIVE INDUSTRIAL RED BOOK
MOTOR WORLD WHOLESALE
CHILTON CATALOG & DIRECTORY
COMMERCIAL CAR JOURNAL
OPERATION & MAINTENANCE

clean with

START saving money now! Start *now* to use Oakite materials for car washing, shop cleaning and paint stripping. You will save time, labor and money throughout the year.

What is more, your cleaning will be done SAFELY, for Oakite materials cannot burn or explode. Write for booklet.

Oakite is manufactured only by
OAKITE PRODUCTS, INC.
18 E. Thames Street, New York, N. Y.

OAKITE
TRADE MARK REG. U.S. PAT. OFF.
Industrial Cleaning Materials and Methods

BIG PROFITS *IN AXLE ALIGNMENT*

Axle caster is the basic steering angle—when an axle is tilted at the wrong angle, it causes hard steering, tire cupping, and SHIMMY. Unless axles are in line, all checks and corrections of front wheel pitch and toe-in are worthless.

The Bear Axle Gauge is the only practical tool that checks axle tilt and finds bent or twisted axles without removing them. Takes ten minutes to use, and it will find hundreds of dollars worth of repair work for your garage, every month. Half of the cars on the road need wheel and axle alignment service. **Specialize**, and make big money—others are doing it—so can you. Write for full information.

We make all of the equipment for complete alignment service—recommended by all principal automobile and tire manufacturers.

Write for our free Manual—tells how to locate SHIMMY and all other troubles due to wheel and axle alignment.

Bear Manufacturing Co., Rock Island, Ill.

Rubyfluid
TRADE MARK REG.

Makes a Tight Joint

The results of your work with Rubyfluid are right. You know that before you start.

That's why this non-corrosive, non-explosive, non-injurious soldering and tinning flux is preferred by mechanics everywhere. Do a job with Rubyfluid. You'll like it.

The Ruby Chemical Co.
68-70 McDowell St., Columbus, Ohio

CAR OWNERS WANT
"Common-Sense"
Closed Car
Ventilators
NOW

Sell Them NOW and Make Money

Ask Your Jobber or
Write ACKERMAN-BLAESSER-FEZZEY, Inc.
Also makers of "Common-Sense" Seat SNUBBERETTES—Shock Absorbers for Closed Cars
1258 Holden Detroit

FOLLETT'S NEW MODEL **TIME STAMP**
accounts for every labor minute

Learn the interesting details from our descriptive data.

Prints the year, month, day, hour, minute, A.M. or P.M. at the exact moment the plunger is pressed—like this, for example:

NOV 19 1920 4 31 PM

Tells when a job is started—and when it is finished. There can be no dispute over the time charge.

Absolutely automatic — except for winding. Every machine guaranteed.

Follett Time Recording Co., 217 High Street, Newark, N.J.
"Established Since 1904"

MOTOR AGE

Newsy, breezy, timely, and reliable . . . . . edited by live men for the forward-looking merchandisers of automotive products . . . . . a weekly business paper for live dealers

FREDERICKS
Rewinds

New low prices: Rewinding or exchanging any two unit type of automobile generator or starter armature, $2.50. Any type of Ford armature $1.50. Special prices on Ford armatures in quantities.

H. M. FREDERICKS CO., Lock Haven, Pa.

STANDITALL AUTO RADIATOR

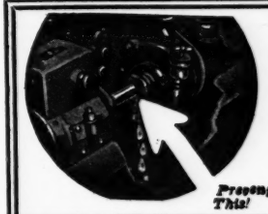
Damageproof against repeated boilings and freezings. Built to last the full life of the car. Complete radiators for Fords, Chevrolets, Dodges and Maxwells. Cores for all cars and TRUCKS. If not at your jobber's, write direct.

J. C. Black Mfg. Co., Inc., Oil City, Pa.

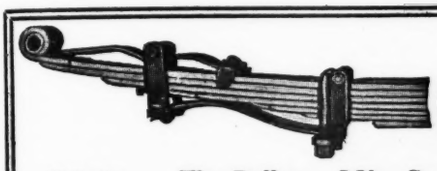
SCHEBLER
"REG. U. S. PAT. OFF."
The World's Finest CARBURETORS
The Wheeler-Schebler Carburetor Co. Indianapolis, U. S. A.

Mohawk Electric One Dial Radio

DO YOU KNOW ABOUT
HOUDAILLE Hydraulic Double Acting SHOCK ABSORBERS
Write
Houde Engineering Corporation
539 East Delavan Avenue Buffalo, N. Y.



Stops Pump-shaft Leaks and Saves the Winter Solution
CONNEAUT PLASTIC METALLIC PACKING will keep the water-pump tight no matter what winter solution is used.
All sizes in one can. Stocked with your Jobber
1 lb. can ..... $1.75 per lb.
5 lb. can ..... $1.60 per lb.
THE CONNEAUT PACKING CO.
Conneaut, Ohio


Bellevue SPRING CONTROL
Actually Controls the Car Spring
Write for Catalogue
The Bellevue Mfg. Co., Bellevue, O.

Weidenhoff Shop Equipment
for Battery and Electrical Service
4358 Roosevelt Road Chicago, Illinois

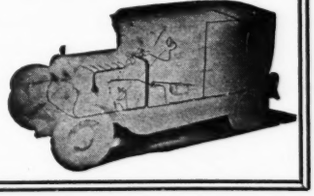
PUT UP YOUR HUTTO SIGN
The current Saturday Evening Post advertisement appeared January 7th, full page—in colors.
To get the sign: Tear out this advertisement and send us your name and address together with the name of the jobber from whom you bought your Hutto.
If you haven't a Hutto Grinder—write for copy of 50 page book: "Profit from the Daily Grind."
HUTTO ENGINEERING CO., INC.
519 Lycaste Ave. Detroit, Mich.

Something New!
An Automotive Manufacturer with 25 years' experience and excellent reputation has produced an entirely new type and design of double-acting hydraulic shock absorber. It represents the most advanced ideas in spring control, is simple to install and requires no service.
For complete information, address
COVERT GEAR & MFG. CORP.
Grand Street Lockport, N. Y.

free write for your copy
The Book "AIR PROFITS" Shows how to get more work out of an air compressor. How to use compressed air for many pay-jobs.
BRUNNER MFG. CO.
UTICA NEW YORK
BRUNNER AIR COMPRESSORS

SPEED UP YOUR TIRE SERVICE
The Elmes Booster Pump
will raise the press platen
SEVEN TIMES AS FAST
as the Hydraulic Pressure Pump.
THE TIRE DEALER SAYS
"This small Investment Pays Big Dividends."
Easily attached to any make of press.
The Charles F. Elmes Engineering Works, 230 N. Morgan St., Chicago

Packard Cable
The Packard Electric Co.
Warren, Ohio



SWAP a postage stamp for thousands of dollars worth of real facts on Car Washing. Send for your free copy of the hand book.
FREE
MANLEY MFG. CO.
York, Pa., U. S. A.

TIMKEN
Tapered
ROLLER BEARINGS

JAYENEL
AUTOMOBILE
Steam Heater
One model fits all makes and types of cars and gives moist, healthy heat without any odor instantly.
JUDD & LELAND MFG. CO., Clifton Springs, N. Y.

To locate business opportunities
To sell, rent, exchange or buy
To find men or employment

THE CLASSIFIED DEPARTMENT WILL HELP YOU

CLASSIFIED

EQUIPMENT FOR SALE — Bins, Shelves, Drawers and equipment for the Garage. We have had seventeen years' experience in building inexpensive equipment. Write us. Hobart Cabinet Co., Troy, Ohio.

WANTED—Salesmen with established calls to automobile trade and filling stations. Neo-X Products, Gladwin, Mich.

CLASSIFIED ADVERTISING RATES

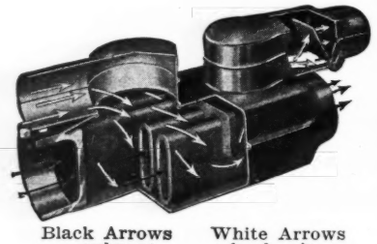
Ten cents a word is the rate for all undisplayed advertisements set solid, regular want ad style; minimum charge $1 an insertion. All capitals, 12c a word; all capitals, leaded, 15c a word. Payable in advance.

PLENTY OF HEAT
QUICKLY!

The Standard Safety Heater gives large quantities of fresh, warm air instead of just a little hot, stagnant air. No obstructions! No restrictions! Plenty of heat whenever the motor is running.

Here's the heater that's built from the point of view of the man who installs them! An hour and a half at the outside—sometimes 45 minutes is all it takes to install the Standard Safety Heater!

You carry only one size and model which, with a small assortment of adaptors, fits practically all makes of cars.



Black Arrows —exhaust White Arrows —fresh air

SAFE—one piece, gas-tight casting with no welded or brazed joints.

Send for prices and discounts

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The special design of the Stay-On Tire Chain Adjuster makes it impossible for the chain to clank or slip. At all speeds of the wheel the chain is absolutely rigid. Stay-On's sell well with and for tire chains. Cuyahoga Specialty Company, 10252 Berea Rd., Cleveland, Ohio.

Stay-On
Tire Chain Adjuster

There's always something new just at hand for the regular reader of MOTOR AGE

Index to the

The Advertisers Index is published as a convenience, and not as a part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.

A

Ackerman-Blaesser-Fezzey, Inc. 64

B

Bear Mfg. Co. 64
Bellevue Mfg. Co. 65
Black Mfg. Co., Inc., J. C... 64
Brunner Mfg. Co. 65

C

Chevrolet Motor Co...3rd Cover
Chilton Class Journal Co., 62, 63
Classified Advertising Section 65
Conneaut Packing Co..... 65
Continental Rubber Works. 1
Covert Gear & Mfg. Corp... 65
Cuyahoga Specialty Co. 66

E

Eclipse Machine Co. 2
Elmes Engineering Works, Chas. F. 65

F

Follett Time Recording Co. 6
Fredericks Co., H. M. 6

G

Graham-Paige Motors Corp. 4,

H

Houde Engineering Corp.... 6
Hudson Motor Car Co., Front Cover
Hutto Engineering Co., Inc. 6
Hydraulic Brake Co. 5

J

Judd & Leland Mfg. Co. ... 6

Advertisements

K

Kellogg Mfg. Co. 8

M

Manley Mfg. Co. 65
Mohawk Corp. 65
Motor Wheel Corp..Back Cover

N

Nash Motors Corp. 6
New Departure Mfg. Co. ... 7
North Bros. Mfg. Co. 67

O

Oakite Products, Inc. 64

P

Packard Electric Co. 65
Perfect Circle Co.....2nd Cover

R

Ruby Chemical Co. 64

S

Standard Tube & Mfg. Co. 66
Studebaker Corp. of America 57, 58, 59, 60

T

Thordarson Electric Mfg. Co. 3
Timken Roller Bearing Co.. 65

W

Weidenhoff, Joseph 65
Wheeler-Schebler Carburetor Co. 65

This man drove the blade of "Yankee" No. 90 Plain Screw-driver right through a four-inch plank — without splitting the handle.

He used a heavy mallet on No. 90 but that didn't matter.

Then, this powerful twist failed to turn handle on the blade.

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No. 90—Standard Style, 15 sizes, 1½ to 30-in. blades.

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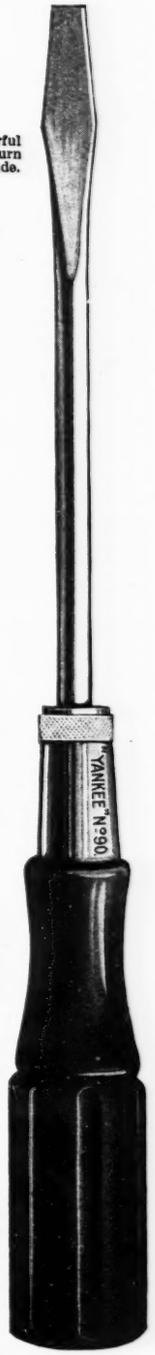

NORTH BROS. MFG. CO., Philadelphia, U. S. A.

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